to offset declines among other occupations in this group.

The remaining low growth clusters, transportation, not specified elsewhere (index 35) and public services, not specified elsewhere (index 25), have significant excess labor force potentially entering these occupations. The first cluster contains only three negative growth occupations, but these, together with low growth rates among the remaining occupations were insufficient to offset substantial excess labor force entry (-8.595). Two positive growth occupations were insufficient to offset the declines in the occupations of cluster 18, public service, not specified elsewhere. The result is expected to be surplus labor force entry.

A number of VEMIS occupations are scattered among these six groups. These might be examined for possible inclusion in the School District clusters on the basis of their growth indexes, reflecting emergence or declination and their relative importance in 1985 compared with 1974.

PART A

Chapter 5: Emerging, Growing and Declining Occupations

1. The Labor Force and the Occupational Distribution

For the purposes of this study, the basic data from the employment forecasts, 1974-1985 and the student needs survey of Philadelphia High Schools are cast into three categories: (1) a supply simulation, (2) a demand simulation, and (3) an interaction simulation for planning purposes. The word simulation is used to convey the idea that there is no intent to test or display theoretical concepts as such.

Supply is taken to mean the labor force component of the population and its status groups, the employed and unemployed portions. The labor force thus consists of persons who are questioned as to their employment status, usually in households, either at decennial census dates, but also on the occasion of regular or special surveys. From the census are obtained great detail about the characteristics of the labor force by area and this forms the basis for the occupational distribution of employed and unemployed persons for the Philadelphia SMSA. From the surveys are obtained great detail at the national level and more aggregate data for areas such as Philadelphia, usually only employment and unemployment. The census and surveys also furnish detail as to the employment in the various industries nationally and by area. This fact becomes useful in tracing the employment of persons between census dates. This is accomplished by taking surveys of establishments to discover the number of jobs that are being filled, based upon the needs or requirements of industrial establishments. But since individuals may have several jobs, these data do not satisfy the labor force definition of characteristics of persons until dual job holders and moonlighters have been removed from the establishment derived data. Thus from the demand source of data, a supply concept source of data is derived. The household (census or survey) data are then related by means of a system of codes, the Census Coding system and the Standard Industrial Code system. Once these two systems have been reconciled, the occupational and industrial characteristics of workers may be compared from period to period and the supply (labor force) may be compared with the demand (requirements) of industries.

As has been mentioned, demand refers to the requirements that business establishments have for employees. Establishments are asked by various agencies (U.S. Census, U.S. Bureau of Labor Statistics, Penna. Department of Labor and Industry, the Social Security Administration) to furnish information on the number of jobs filled, about hours worked, about wages and salaries, about output, about capital, among other things relating to the demand for workers. Employment data flowing from these sources then generally reflect the demand situation in establishments. In the following discussion, problems related to supply estimates will be taken up first, followed by a discussion of the forecasts of occupational requirements (demand) and finally, both supply and demand estimates are compared.

2. Supply Estimates

a. Sources of Supply Data*

As indicated above the labor supply consists of the employed and unemployed portions of the labor force and data are developed from the census and surveys. When it comes to estimating the supply of labor for individual occupations at other than decennial census dates so as to determine the sources of changes, a wide variety of sources are used. These include surveys of scientific and technical personnel, wage surveys of the Bureau of Labor Statistics and other Federal agencies, the State Employment Security agencies, professional associations, occupational training agencies, such as colleges and universities, Federal manpower programs, Vocational education, and apprenticeship training programs among other sources.

In additions to the above sources, supply is affected by migration, by entrants from outside the labor force, by transfer from one occupation to another, and by separations and deaths. The latter were used to adjust the supply data. Occupational separations and death rates are calculated by applying age-sex specific rates from working life tables to the age-sex distribution of workers in an occupation. This method assumes that separation and mortality patterns are the same for each occupation. The resulting rates vary only because of differences in the age-sex distributions among occupations.

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*U.S. Department of Labor, Bureau of Labor Statistics, Occupational Supply. Concepts and Sources of Data for Manpower Analysis. Bulletin # 1816. Washington, D.C. U. S. Government Printing Office, 1974.

State and area rates have been worked out by applying national working life tables to the state and area occupational sex-age distributions. These rates provided the bases for calculating the labor force separations data found in the basic tables.

b. Supply in the Present Study

The estimation of the supply for all occupations, based on the detailed sources indicated above is outside of its scope of this study. Nevertheless, an estimate of the labor force by occupation was prepared for this study. A forecast of the total labor force in 1985 was adopted (the B.L.S. estimate). This estimate was distributed over the detailed occupations in proportion to their numbers in 1974, It was thereby assumed that the 1974 occupational distribution would remain constant from 1974 to 1985. The employment forecast for 1985 was subtracted from the 1985 labor force in each occupation. The difference in each occupation was used to adjust the total job openings in 1985 (employment growth plus labor force separations plus or minus the difference between the estimated 1985 labor force and the 1985 employment forecast). If the labor force was less than the employment the difference was added to the total openings, and if the labor force in 1985 was greater than the employment in 1985, the difference was added to total openings. This resulted in an adjusted set of total openings, which are termed 'target openings' for the purposes of this report. The purpose of this procedure was to emphasis the fact that in addition to the 1985 demand for labor in terms of total job openings, the availability, of the labor supply, or the lack of it, would result in more competition for jobs or relative shortages in particular occupations.

This is one method of permitting the role of the degree of unemployment to inform the perspective of the training agencies. The basic tables show the magnitudes of this adjustment for each occupation.

c. Student Needs

A most detailed study of the supply of workers by occupation, which is an integral part of this study is the survey of student needs. A discussion of this part of the study is taken up in Part B, below. Here it will suffice to call attention to the fact that the survey of high school students in the Philadelphia School District is but one source of such information about the supply. Despite its limited scope, the survey will, to some extent, permit a comparison of the distribution of students' occupational preferences with the distribution of the demand for labor in each occupation, as represented by job openings.

2. The Demand: Employment and Job Openings

As indicated above, the demand for labor originates in the establishments that require labor for their operations. The total demand for labor in 1974, by occupation is the number of persons employed multiplied by the number of jobs each person holds. In this study, the 1974 employment estimates fall short of the total number of jobs and refer to the number of persons holding jobs. The 1985 forecasts of employment also fall short of the total demand for persons in all jobs, since the 1974 demand refers to workers in their primary occupations. To the changes in employment by occupation, from 1974 to 1985, were added the labor force separations to provide for a more complete measure of the total demand for persons in 1985. As indicated above this measure of demand was adjusted by adding the labor force deficit and subtracting the labor force surplus in 1985. The demand for persons to fill 'target job openings' on a one job per person basis is discussed below in terms of significant groups of occupations and growth rates of target openings and employment, 1974-1985.

a. Emerging Occupations

For a number of reasons it is of some interest to identify new or emerging occupations. One reason is to advise and/or train people to move into such occupations which seem to have a future. Another reason is to enable educational institutions to prepare for an influx of people interested in such occupations. It is also useful to obtain information about such jobs so as to prepare the groundwork for counselling and program development and related planning for facilities and staffing.

The need is perhaps obvious, but the method of identifying jobs which will become increasingly important is another matter. One approach that suggests itself is to identify new technologies. Source of the work force in such industries will need skills much like those in long established industries, e.g. clerical, machinists, production line operatives, who might require some on-the-job training in order to put together, e.g. transistorized television sets, rather than tube sets. There is also experience indicating that the work force in new technology industries must undergo a revolutionary change, An example is the case where craftsmen and operatives must have a much higher order of education skill and training in order to deal with the complexities of the new industries. Massachusetts seems to have undergone such a revolution in the 1950's. A high-level skill work force supplanted one of low levels skills. Changes in the education and training levels required of the Philadelphia area labor force will be analyzed and discussed in another section of this report, in which the occupations have been classified by educational level.

In this section of the report, emerging occupations are defined more directly than by reference to changes in education and training levels. The following criteria were adopted in order to define emerging occupations:

1. Relative importance of an occupation in 1985 target openings;
2. Above average rate of change in 1985 target openings relative to 1974 employment;
3. Above average rate of change in 1985 employment relative to 1974 employment; positive growth in target occupations.

Several groups of occupations were identified by this arbitrary procedure:

Group A: 0.01-0.09% of 1985 target openings;

Group B: 0.10-0.19% of 1985 target openings;

Groups C-F: Other occupations, with above average rates of target openings and/or of employment change 1974-1985 in the Philadelphia area. These groups, while they may contain some emerging occupations, really serve to set a boundary to the group of emerging occupations. It also serves to complete the list of above average target and growth occupations.

Finally, there remains the group of growth occupations for which positive growth rates of between 0 and 10.1% have been forecast. These are identified as G occupations and are discussed below. Some comments may be in order about the characteristics of each group. Group A comprises 34 occupations with target openings in 1985 between 0.01 and 0.09%. This group constitutes only 1.84% of all target openings in 1985 in the Philadelphia area and 1.51% of employment in 1985 for the United States as a whole. The average group index of

Table V

Emerging Occupations, Philadelphia SMSA and United States
1974-1985

Group A: 0.01-0.097 of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Professional and tech.											
51		Geologists	.04	35.03	173	80	47.5	470	74.0	.01	187	$105.00	
54		Life, Physical scientists	.01	38.06	188	113	21.2	210	62.7	.01	112	$117.00	
34		Actuaries	.01	34.58	171	538	31.0	307	41.7	.04	115	$ 98.00	
35		Mathematicians	.01	59.15	292	166	32.5	322	125.1	.01	152	$103.00	
36		Statisticians	.03	32.76	162	552	15.4	152	366.4	.04	130	$100.00	
54		Industrial engineering tech.	.03	36.42	180	655	34.3	340	502.1	.05	153	$117.27	
161		Surveyors	.11	20.92	103	1041	38.6	382	833.1	.08	160	$112.30	
61		Chiropractors	.02	25.01	123	272	38.2	378	328.9	.03	244	$135.00	
74		Dieticians	.04	28.79	142	752	12.2	121	675.0	.07	181	$154.81	
63		Optometrists	.02	24.61	121	536	42.5	421	633.0	.06	239	$135.00	
71		Podiatrists	.01	16.25	80	432	29.4	291	392.9	.04	184		

Table V

Emerging Occupations, Philadelphia SMSA and United States
1974-1985

Group A: 0.01-0.09% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Averag
72		Veterinarian	.03	41.66	206	362	71.3	706	578.3	.06	323	$13,697	
82		Health record technologists	.04	114.80	566	376	74.7	740	875.0	.09	470		
84		Therapy assistants	.01	132.61	654	67	98.5	975	165.1	.02	498		$10000
172	16.0113	Tool programmer, numerical	.01	39.25	194	81	33.3	330	62.9	.01	157	$7,540	
5		Other computer specialists	.03	62.46	308	358	30.2	299	212.9	.02	120		
141		Other education teachers	.10	44.74	221	885	26.9	266	761.4	.08	174		
175		Actors	.01	50.00	247	115	45.2	448	118.3	.01	208		
182		Dancers	.01	42.86	211	113	30.1	298	170.7	.02	305		
33		Archivists and curators	.01	38.12	188	169	34.3	340	187.6	.02	224		
26		Foresters, conservationists	.06	26.02	128	154	33.8	335	112.0	.01	147		

Table V

Emerging Occupations, Philadelphia SMSA and United States 1974-1985

Group A: 0.01-0.09% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Managers, officials, Prop.											
235		School administrator, college	.09	81.28	401	1294	18,3	181	869.0	.09	136		
		Clerical and Kindred											
363	4.17	Real estate appraiser	.04	38.01	188	610	16.7	165	424.0	.04	140		
		Crafts and kindred workers											
412	17.100302	Bull-dozer operators	.18	50.78	251	1064	31.0	307	718.3	,07	136		$8.25/h
512	17.1005	Paper hangers	.02	25.00	123	1078	11.5	114	700.1	.07	136		$8.10/h
480	1.0301	Farm implement mechanics	.07	22.96	113	461	30.6	303	361.2	.04	158		$3.60/h
445	17.1009	Glaziers	.04	27.78	137	745	31.7	314	571.1	.06	155		$8.05/h

Table V

Emerging Occupations, Philadelphia SMSA and United States 1974-1985

Group A: 0.01-0.09% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Venis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Operatives											
634	4.00	Meat wrappers, retail trade	.06	27.43	135	1219	12,4	123	775,2	,08	128		$3.97/
625	4.00	Produce grader, packer, etc. factory, farm	.03	10.34	51	216	18,5	183	154,9	,02	145		
601	17.1099	Asbestos, insulation workers	.05	66.65	329	718	41,8	414	604,5	,06	170		$9.35/
704		Conductors and operators, urban rail	.01	37.53	185	302	24,2	240	124,0	,02	116		
		Service workers											
931	4.19	Flight attendants	.05	36.57	180	177	23,7	235	264,3	,03	302	$8424	
932		Attendants, reservation, amusement	.11	32.63	161	1152	19,1	189	759,1	,08	133		
940	4.11	Boarding, lodging, housekeepers	.04	7.34	36	465	19,6	194	645,5	,07	280		

Table V

Emerging Occupations, Philadelphia SMSA and United States
1974-1985

Group A: 0.01-0.09% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Total emerging occupations	1.51	38.34	189	17318	27.99	277	14670.3	1.84	171		
		Total all occupations	103,355.0	20.27	100	1983	10.1	100	982776.0	100.00	100		

relative change of target openings in 1985 was 171 (i.e. the rate of change is 71% above the average for all occupations. The rate of change in employment, 1974-1985, was 27.99% compared with the rate of change in employment in all occupations of 10.1%, or an index of relative change of 277. The United States index was 189, partly reflecting the higher growth rate of all occupations (20.27%).

An inspection of the detailed occupations show that emerging occupations are not "new" occupations, e.g., actuaries. They may, however, be emerging in the sense of becoming increasingly important and that at an accelerated rate. None of the occupations have more than about 1294 employees in 1974, and none have less than 80. It may be easy for a small number to have a high rate of change, but even for this to occur in a small occupation requires significant changes, unless they are the victims of statistical artifacts, growing out of the data gathering and forecasting procedures.

Group B, a smaller group, consists of nineteen occupations with ranging from 0.10-0.19% of 1985 target openings. This group comprise 2.57% of 1985 target openings and 1.31% of U.S. employment in 1985. The lowest number employed in 1974 was 678 school monitors, having a 52.9% change by 1985. The highest employment was in radio and television repairing (2803) with an employment growth rate of 22.9% (change index 227). This group's rate of growth of employment was 21.38% in Philadelphia (index 212) and 42.88% for the U.S. (index 212). Target openings were 19% above the average for all Philadelphia target openings.

Table V

Emerging Occupations, Philadelphia SMSA and United States
1974-1985

Group B: .10-.19% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Professional and tech.											
180		Athletes and kindred workers	.10	40.25	199	1429	44.1	437	1655.1	.17	234		
101		Recreation workers	.15	47.06	232	2284	21.7	215	1644.4	.17	147		
		Managers, Officials, Proprietors											
210		Credit managers	.09	36.38	179	1595	20.1	199	964.2	.10	122	$8750	
215		Inspectors, etc. construction public	.15	45.46	224	2574	16.6	164	1395.3	.14	109		
260		Advertising agents, sales workers	.09	31.86	157	2053	25.3	250	1542.9	.16	152		
262		Demonstrators	.06	7.33	36	879	32.3	320	1074.4	.11	247		

Table V

Emerging Occupations, Philadelphia SMSA and United States 1974-1985

Group B: .10-.19% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Clerical and kindred											
313		Collectors, bill and account	.08	34.93	172	1630	14.5	144	988.5	.10	122	$5200	
362		Proofreaders	.04	27.86	137	1256	19.7	195	1216.2	.12	195		
		Crafts and kindred											
421		Cement and concrete finishers	.12	33.33	164	2023	22.5	223	1010.7	.10	101		$8.05/hr
534		Roofer and slater	.13	44.44	219	2654	27.6	273	1585.3	.16	121		$8.10/hr
404		Boilermakers	.06	54.98	271	1740	32.4	321	1327.6	.14	154		$8.60/hr
475		Data processing machine repair	.09	85.99	424	1694	51.4	509	1610.1	.16	192		$165/wk.
484		Office machine repairers	.09	49.23	243	1846	40.0	396	1418.4	.14	155		$160/wk.
485		Radio, television repairers	.17	34.34	169	2603	22.9	227	1456.1	.15	105		$5/hr.
506		Opticians, lens grinders, polishers	.06	58.98	291	1009	52.2	517	1253.3	.13	251		

Table V

Emerging Occupations, Philadelphia SMSA and United States
1974-1985

Group B: .10-.19% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Operatives											
645		Photographic process workers	.11	43.42	214	1927	23.0	228	1508.3	.15	158		
933		**Service workers**											
933		Attendants, personal services, n.e.c.	.07	16.65	82	1829	10.4	103	1471.2	.15	162		
952		School monitors	.05	59.43	293	678	52.9	524	971.0	.10	289		
		Laborers, except farm											
754		Garbage collectors	.17	72.23	356	1859	26.9	266	1138.3	.12	124		
		Total emerging occupations	1.31	42.88	212	42945	21.38	212	25231.3	2.57	119		
		Total all occupations	103,355,344	20.27	100	1983438	10.1	100	982776.0	100.00	100		

b. Groups of above average Growth Occupations

In addition to identifying a relatively small number of occupations with above average growth characteristics which were termed emerging, a relatively large number of above average growth occupations, employing a relatively large number of workers, was also identified. Whether to call these occupations emergent is one thing, on the other hand, they have existed in relatively large numbers in 1974, and have grown strongly. Thus their growth is not just an artifact of size, but also of strength of economic demand, four such groups have been arrayed for discussion.

C: .20-.49% of target openings;

D: .50-.99% of target openings;

E: 1.00 and +% of target openings; all of the above show above average growth rates of target openings and of employment.

F: All other: these show above average growth rates in employment, but below average rates of growth in target openings.

(l) Group C:

Some 30 occupations, representing about 99,500 (10%) of target openings in 1985, comprise Group C. The employment change of this group, 1974-1985 was 158% in Philadelphia and 85% for the United States. Philadelphia target openings increased by 67% for the group as a whole. The growth rate of target openings ranged from 111 for computer programers to 469 for other technicians except health. Librarians was the only occupation in this group which fell below the average growth rate in the United States as a whole.

Numerically, the most important occupations were taxicab drivers, therapists, lawyers, wholesale and retail trade, sales managers, bartenders and real estate agents and brokers. Target openings growth rates ranged from 115 (bartenders) to 341 (therapists).

Ten occupations in Group C experienced target openings growth rate over 100% (relative change indexes of 200 or over): therapists, dental hygienists, radiological technicians, other technicians except health, artists, waiters, technicians n.e.c., managers, superintendents except building, library attendants and assistants, dental assistants, welfare service aides, and animal caretakers except farm. The change indexes ranged from 208 (library attendants) to 469 (other technicians, except health.)

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group C: .20-.49% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Professional, tech.											
14	910	Engineers, mechanical	.23	27.75	137	5894	15.2	150	2078.6	.21	71		
02		Engineering, Science Tech. Nec.	.29	42.22	208	5854	25.6	253	3527.0	.36	122		
		Medical Workers											
76	1212	Therapists	.22	107.22	529	2635	59.8	592	4451.4	.45	341	$9,600	$13,750
		Health Technol. & Tech.											
83	5207	Radiologic Technol., Tech.	.11	36.59	181	2009	23.6	234	2318.0	.24	233	7,800	9,600
		Technicians, Exc. Health											
173		Other tech. Exc. Health	.09	95.84	473	879	105.5	1045	2041.4	.21	469		
		Computer Specialists											
3	0704	Computer Programmers	.28	48.71	240	6438	22.0	218	3547.0	.36	111	10,660	11,960
4	0705	Computer Systems,Analysts	.15	64.94	320	3183	32.4	321	2095.5	.21	133	12,480	17,160

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group C: .20-.49% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Writers, Artists, Ent.											
184	0602	Editors & Reporters	.21	37.81	187	3985	22.3	221	2975.3	.30	151		
194		Writers, Artists, Ent. Nec.	.14	60.59	299	2694	44.0	436	3001.8	.31	225		
		Other Professional, Technical											
2	0202	Architects	.11	40.29	199	2395	33.5	332	1998.4	.20	168	$9,490	$23,000
32	1601	Librarians	.20	19.73	98	4706	13.2	131	3650.3	.37	157	9,423	
55		Operations, Systems Research	.16	68.91	340	3121	46.2	457	2958.5	.30	191		
195		Research Workers, Nec.	.24	62.54	309	4051	37.7	373	3705.6	.38	185		
		Buyers, Sales, Loan Mgr.											
205	04.08	Buyers, Wholesale, Retail	.22	39.39	194	4796	28.2	279	4402.7	.45	185	8,650	
231	04.12	Sales Magr., Retail Trade	.41	33.43	165	7476	20.7	205	4357.8	.44	118		

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group C: .20-.49% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Venis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Administrators, Public Inspector											
212	1202	Health Administrators	.24	66.67	329	3195	24.5	243	2620.5	.27	166		
240	0827	School Adm., Elem. Secd.	.27	33.71	166	4709	23.3	231	3328.9	.34	143		
		Other Mgrs, Officials, Pr.											
216		Managers, Suprdts, Bldg.	.17	43.67	215	1798	33.2	329	2222.2	.23	249		
		Sales Workers											
264	04.06	Hucksters & Peddlers	.20	-5.26	-26	2540	20.2	200	2166.8	.22	172		
270	04.17	Real Estate Agents, Brokers	.46	21.83	108	7137	11.6	115	4296.9	.44	122		$21,000
		Other Clerical Workers											
312	14.0805	Clerical Supr; Nec.	.29	37.57	185	6138	18.1	179	3917.0	.40	129		
326	04.13	Insurance Adjust; Exam.	.15	21.60	107	3528	18.6	184	2006.5	.20	115		
330	14.0499	Library Attendts, Assist.	.17	30.60	151	3178	20.9	207	3276.3	.33	208		8,642
332	14.0403	Mail Handler, Exc. Post	.19	34.86	172	4648	17.6	174	3622.8	.37	157		

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group C: .20-.49% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Constr. Crafts Workers											
436	17.1003	Excavating, Grading, Mach. Oper.	.41	51.62	255	3722	31.9	316	2551.0	.26	138		
		Mechanics, Repairers, Instal.											
470	17.01	Air Condt., Heating, Refrig.	.28	37.02	183	6540	24.2	240	3743.7	.38	116		$6.75/hr.
		Transport Equip. Oper.											
714	04.19	Taxi cab drivers, Chauff.	.14	-17.90	-88	5808	25.1	249	4728.5	.48	164		3.25/hr.
		Food Service Workers											
910		Bartenders	.29	28.77	142	7266	12.8	127	4123.9	.42	115		
		Health Service Workers											
921	07.0101	Dental Assistants	.15	31.36	155	2095	52.4	519	5913.0	.40	377		6,200
		Personal Service Workers											
954		Welfare Service Aides	.09	72.73	359	1957	44.9	445	2881.4	.29	297		

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985

Group C: .20-.49% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Laborers, Except Farm											
740	01.99	Animal Caretakers, Exc. Farm	.13	24.54	121	1651	71.1	704	3004.1	.31	367		
		Total Growing Occupations	6.73	37.49	185	126025	26.1	258	99512.8	10.13	167		
		Total All Occupations	103355344	20.27	100	1983438	10.1	100	982776.0	100.00	100		

(2). Group D

This group consists of 18 occupations in the range of .50 to .99% of target openings. The rate of change of target openings for the group was 85%, with change indexes ranging from 104 (plumbers, pipe fitters and apprentices), to 566 (other health technologists and technicians). This group experienced an employment growth change that was higher for Philadelphia (269) than for the United States (189).

Three occupations have target openings ranging between 7209 and 8830 (bank and financial managers, bank tellers, and gardeners and groundkeepers). Their growth rates ranged from 146 to 203. Nine occupations experienced change rates in target openings of over 100%: dentists, dental hygienists, clinical laboratory technologists, other health technologists, vocational education counsellors, bank tellers, billing clerks, lodging quarters cleaners, and health aids except nurses, their growth rates ranged between 203 (bank tellers) and 566 (other health technologists).

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985

Group D: .50-.99% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Professional, Tech.											
		Medical Workers											
62	1204	Dentists	.13	38.01	188	3049	57.0	564	5181.2	.53	343	$15,481	$38,000
		Health Technol. & Tech.											
80	1223	Clinical Lab. Technol.Tech	.23	52.26	258	4511	29.5	292	5287.0	.54	237		
		Dental Hygienists	.06	157.79	778	452	185.6	1838	5287.0	.54	237	7,596	10,400
85		Other Health Technol. Tech	.15	101.77	502	2190	113.0	1119	6145.6	.63	566		
		Teachers											
145		Teachers, Sec. Exc. Coll. Univ.	.38	43.18	213	5886	19.4	192	5372.9	.55	184		
		Writers, Artists, Entert.											
190	1002	Painters & Sculptors	.18	24.83	122	7958	20.2	200	5681.6	.58	144		
		Other Professional, Techn.											
100	2104	Social Workers	.42	42.81	211	8861	10.5	104	5639.1	.57	128	8,250	
174	0826	Vocational Ed. Counselors	.22	78.58	388	3066	71.2	705	5505.5	.56	362		13,600
		Buyers, Sales, Loan Mgrs.											
202	0504	Bank, Financial Mgrs.	.68	47.34	234	10469	31.4	311	8830.2	.90	170	9,960	

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985

Group D: .50-.99% of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Temis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Other Mgrs, Off. Pr.											
220	14.0805	Office Mgrs, Nec.	.46	40.37	199	7611	28.7	284	6363.9	,65	169		
		Other Clerical Workers											
301	14.0105	Bank Tellers	.43	33.28	164	7810	22.6	224	7839.6	.80	203		$6,292
303	14.0303	Billing Clerks	.21	46.49	229	4576	32.2	319	5666.4	.58	250		
314		Counter Clerks, Exc. Food	.41	27.88	138	7685	17.0	168	6353.9	.65	167		
321	14.101	Estimators, Investigators Nec	.49	35.65	176	10535	15.3	152	6278.4	.64	120		
		Construction Crafts Workers											
522	17.1007	Plumbers, Pipe Fitters & Appr.	.54	38.69	191	11691	21.2	210	6001.9	.61	104		$9.00/hr.
		Cleaning Service Workers											
901	09.0205	Lodging Quarters Cleaners Exc. Private	.30	37.13	183	3964	33.0	327	5369.7	.55	273		

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group D: .50-.99% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Health Service Workers											
922		Health Aides, Exc. Nurs.	.28	60.01	296	3193	44.3	439	4872.9	.50	308		
		Laborers, Exc. Farm											
755	01.0504	Gardeners, Ground Keeper, Exc. Farm	.62	9.33	46	9941	21.7	215	7208.8	.73	146	$6,866	
		Total Growing Occupations	6.15	38.24	189	112544	27.2	269	108885.6	11,02	185		
		Total all Occupations	103355344	20.27	100	1983438	10.1	100	982776.0	100.00	100		

(3) Group E

Fifteen occupations make up group E, which experienced an average growth rate in target openings of 104% (a change index of 204). The employment change in Philadelphia for this group was 349 and for the United States it was 250. The growth in target openings ranged from 151 (janitors and sextons) to 488 (secretaries, legal).

By far the most important occcupation in this group is other secretaries with job openings forecast for 1985 of 110,113. This occupation also experienced a very high growth rate (index 276), almosts tripling. Miscellaneous clerical workers (67,474), typists (33,054) and practical nurses (27,719) together accounted for 128,246 openings. Their average target openings growth rate was 306, with a range of 189 to 426 (in terms of change indexes).

In this group only three occupations did not experience a growth rate in target openings of 100% or more (change index of 200): typists (189), janitors and sextons (151) and cooks, except private (159).

As noted, all groups discussed so far experienced rates of change in target openings which were above average as well as having shown above average employment growth rates. The next group, however, exhibits above average growth in employment but a below average growth in target openings.

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group E: 1.0- +% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Averag
		Professional, Tech. Medical Workers											
65	1206	Physicians, MD Osteopaths	.45	48.57	240	10765	54.4	537	15597.1	1.59	292	$11,632	$49,50
75	1203	Registered Nurses	1.15	50.63	250	19735	20.9	207	19885.5	2.02	203	9,100	14,70
		Other Profess. Tech.											
31	1401	Lawyers	.47	42.03	207	8446	41.4	410	10192.4	1.04	244	11,000	28,50
		Stenographers, Typists, Secretaries											
370	14.0702	Secretaries, Legal	.21	62.21	307	4361	70.2	695	10542.3	1.07	488		9,569
372	14.0702	Secretaries, Other	4.26	49.23	243	80475	31.4	311	110113.0	11.20	276		8,172
391	14.0902	Typists	1.35	34.88	172	35259	13.1	130	33054.4	3.36	189	6,344	6,909
		Other Clerical Workers											
364	14.0406	Receptionists	.61	38.35	189	9509	30.1	299	12744.9	1.30	270	5,980	
382		Teachers Aides, Exc. Monitors	.49	87.93	434	4816	82.6	818	10355.9	1.05	434		

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985
Group E: 1.0- +% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Temis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
394		Misc. Clerical Wkrs, Nec	2.33	87.98	434	36214	64,0	634	67474.4	6,87	376		
		Cleaning Service Workers											
902 903	17.11 17.11	Bldg. Interior Cleaners, Nec.	1.00	48.78	241	16409	36.6	362	21264.2	2.16	262		
903	17.11	Janitors & Sextons	1.38	20.94	103	24617	15.1	150	18375.3	1.87	151	$3.30/hr.	$3.74/h
		Food Service Workers											
912	17.2902	Cooks, Exc. Private	1.21	30.91	152	14915	19.0	188	11740.7	1.19	159		
		Health Service Workers											
925	07.0303	Nurses Aides, Orderlies	1.46	64.44	318	14321	35.3	350	18458.1	1.88	260		$123/wk.
926	07.0302	Practical Nurses	.93	96.94	478	13118	64.0	634	27719.3	2.82	426	$6,700	

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985
Group E: 1.0- +% of Target Openings

			U.S. Employment			Philadelphia SMSA							
				1974-85		Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Averag
		Personal Service Workers											
942	09.0201	Childcare Works, Exc. Private	.61	56.29	278	8154	63.1	625	16516.8	1.68	409		
944	17.2602	Hairdressers, Cosmetologists	.60	25.66	127	9961	18.2	180	9853.6	1.00	200	$88.00/wk	$275/
		Total Growing Occupations	18.54	50.62	250	311075	35.2	349	313887.9	31.94	204		
		Total All Occupations	103355344	20.27	100	1983438	10.1	100	982776.0	100.00	100		

(4) Group F

This group consists of a rather large number of occupations which have experienced an above average growth in employment (growth = G > 100 relative change index) but a below average rate of change in target openings (G < 100 relative change index) and which have large growth rates but were a very small (shown as 0.00, but actually less than .01%) proportion of total employment. There are twelve such occupations listed with an aggregate target job openings of 453 in 1985. They experienced a change index of 146 compared with employment of 628 in 1974. Some of these occupations seem truly emergent: atmosphere, space scientists and marine scientists and flight engineers while others are older, recognizable occupations. They are small in numbers, though growing rapidly. There are 14 occupations with between 1000 and 4800 target job openings and 3 occupations with over 6000 job openings: carpenters and apprentices and auto mechanics and apprentices. There are nine occupations with less than 1000 target job openings in 1985. Some of these may be emergent, while others are established occupations.

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985

Group F: All Other GT<100% of Target Openings

			U.S. Employment			Philadelphia SMSA Employment 1974			Philadelphia SMSA Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Professional, Tech.											
43	1913	Atmosphere, Space Scientists	.01	19.05	94	56	69.0	683	79.9	0.00	288		
52	0418	Marine Scientists	0.00	21.28	105	31	29.0	287	24.0	0.00	156	$9,500	$21,800
152	17.13	Drafters	.41	41.93	207	10111	21.2	210	4330.0	.44	86	7,800	10,400
153	5317	Electrical, Electronic Tech.	.23	37.70	186	4367	10.9	108	795.4	.08	37	9,000	13,500
156	1701	Math, Technicians	0.00	40.04	198	27	22.2	220	18.6	0.00	139		
15[illegible]	5315	Mech. Eng. Tech.	.01	20.92	103	232	8.1	80	90.4	.01	79		
		Medical Workers											
73		Other Medical & Health Workers	0.00	100.0	493	10	150.0	1485	39.4	0.00	795		
		Technicians, Exc. Health											
163	5302	Airplane Pilots	.08	24.63	122	730	22.2	220	293.5	.03	81		38,200
165	7.0909	Embalmers	0.00	0.00	0	19	10.5	104	11.9	0.00	127		$250.00/
170	17.0402	Flight Engineers	.01	26.67	132	115	15.7	155	28.3	0.00	50	9,000	

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group F: All Other G>T&100% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Social Scientists											
91	2204	Economists	.13	38.94	192	2663	18.6	184	1250.9	.13	95	$13,000	$24,000
94	2208	Sociologists	.00	87.56	432	11	63.6	630	12.2	0.00	224	9,510	23,300
95	206	Urban & Regional Plannrs	.02	68.22	337	199	14.14	140	78.7	.01	80	11,000	
		Writers, Artists, Entertnr											
183	1009	Designers	.17	28.97	143	3947	10.6	105	1372.5	.14	70		
185	1004	Musicians & Composers	.17	25.05	124	3102	16.5	163	2036.6	.12	99		
191	1011	Photographers	.09	18.75	93	1901	10.8	107	642.5	.07	68	5,850	
192		Public Relations Speclts	.13	28.86	142	2332	12.6	125	1144.6	.12	99	8,250	23,000
		Other Professional, Techn											
56	516	Personnel Labor Relations	.44	38.46	190	8993	12.0	189	3690.7	.38	83	9,800	17,300
		Buyers, Sales Loan Mgrs.											
203	509	Buyers, Shippers, Farm Prod	.02	0.00	0	33	18.2	180	17.6	0.00	108		

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group F: All Other G>T<100% of Target Openings

			U.S. Employment			Philadelphia SMSA						Salaries	
						Employment 1974			Target Openings 1985				
Census Code	Vemis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
255	4.99	Purchasing Agents, Buyers, Nec.	.25	36.49	180	5515	14.9	148	2357.1	.24	86	$8,650	
233		Sales Mgrs., Exc. Retail Trade	.41	28.38	140	8705	19.2	190	3946.4	.40	91		
		Other Mgrs, Off. Pr.											
226		Railroad Conductors	.04	2.49	12	1195	12.7	126	473.1	.05	80		$16,800
		Sales Workers											
265	4.13	Insurance Agents, Brokers, Etc.	.52	15.02	74	11507	13.4	133	4773.7	.49	84		20,000
		Stenographers, Typists & Secretaries											
371	14.0702	Secretaries, Medical	.15	58.73	290	3640	60.7	601	7862.3	.80	436		
		Office Machine Operators											
343	14.0202	Computer, Peripheral Equipment	.32	36.18	178	7788	15.0	149	2838.2	.29	74	8,137	9,641
		Other Clerical Workers											
315		Dispatcher, Starter, Vehcl	.09	28.87	142	2312	16.0	158	1090.8	.11	95		

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group F: All Other G>T4100Z of Target Openings

						Philadelphia SMSA							
			U.S. Employment			Employment 1974			Target Openings 1985			Salaries	
Census Code	Venis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Construction Crafts Wkrs											
415	17.1001	Carpenters & Apprentices	1.27	21.19	105	20543	17.1	169	9646.4	.98	95		$8.41/h
410	17.1004	Brick & Stonemason & Apprentices	.20	23.89	118	4573	13.9	138	1429.9	.15	63		8.97/h
430	17.1002	Electricians & Apprentices	.71	30.92	153	13328	12.8	127	4045.2	.41	61		8.96/h
		Metal Working Craft-workers, Exc. mechanics											
454	17.2302	Job & Diesetters, Metal	.13	30.76	152	1811	16.6	164	647.1	.07	72		
502	17.1099	Millwrights	.11	21.04	104	1977	13.0	128	699.2	.07	71		5.76/hr
		Mechanics, Repairers, Installlers											
473	17.0302	Auto Mechanics & Apprentices	1.07	23.88	118	19810	13.9	138	6098.4	.62	62		7.02/hr
482	17.02	Household Appliance Mechanics	.16	24.09	119	3562	11.5	114	1122.0	.11	65		2.63/hr

Table V

Growing Occupations, Philadelphia SMSA and United States 1974-1985

Group F: All Other GT<100% of Target Openings

			U.S. Employment 1974-85			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vanis Code	Occupations	1985 Percent	Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Averag
		Transport; Public Utilities Crafts											
455		Locomotive Eng.	.04	2.37	12	744	12.8	127	355.3	.04	96		$19,41
		Other Crafts, Kindred Workers											
420	17.1099	Carpet Installers	.08	20.00	99	1260	11.0	109	214.5	.02	34		$6.78/h
		Semi-skilled Metal Wk.											
680	17.2306	Welders & Frame-cutters	.79	26.15	129	14069	11.3	112	4064.0	.41	58		7.25/h
		Other Operatives, Exc. Transpt.											
605		Surveyor Helpers	.01	20.95	103	215	11.6	115	48.1	0.00	45		5,996
		Transport Equip. Oper.											
710		Rail Vehicle Operator, Nec.	.01	-0.01	0	52	19.2	190	33.6	0.00	130		
		Protective & Serv. Wkrs.											
963		Marshalls & Constables	.01	49.25	243	46	23.9	237	58.5	0.00	257		

Table V

Growing Occupations, Philadelphia SMSA and United States
1974-1985

Group F: All Other G>T<100% of Target Openings

			U.S. Employment			Philadelphia SMSA							
						Employment 1974			Target Openings 1985			Salaries	
Census Code	Vesis Code	Occupations	1985 Percent	1974-85 Percent Change	Change Index	Number	Percent Change 1974-85	Change Index	Number	Percent	Change Index	Starting	Average
		Laborers, Exc. Farm											
752	17.08	Fishers, Hunters & Trappers	.03	-5.04	-25	119	72.3	716	185.7	.02	315		
763		Teamsters	0.00	-40.40	-199	24	12.5	124	2.1	0.00	18		
		Farmers & Farm Mgrs.											
802	01.0104	Farm Managers	.04	18.17	90	347	23.6	234	239.7	.02	139		
		Total Growing Occupations	8.32	26.61	131	162021	7.4	73	68189.0	6.94	118		
		Total All Occupations	103355344	20.27	100	1983438	10.1	100	982776.0	100.00	100		

c. Below Average Growth Occupations

The average rate of growth of employment in all occupations, according to the forecasts of the Department of Labor and Industry was estimated at 10.1%. In previous sections of this chapter above average growth occupations were analyzed. In this section attention is called to occupations whose employment growth was estimated to be below average. These occupations are called slow growth occupations and are coded "S" on the basic data tables*.

About 60 occupations displayed below average rates of growth in employment (and also in target openings). They represented about 33% of 1974 employment and 20% of target job openings in 1985. The average rate of growth of these occupations was 4.3% (change index of 42). Target job openings increased 30% by 1985 (index 60).

Two aggregated or catchall occupations namely, other managers, administrators employed 115,978 workers and sales workers, n.e.c. employed 111,647 workers in 1974. They were expected to grow at the rates of 3.8% and 8.2% respectively by 1985. A number of occupations in this group employed over 20,000 workers in 1974: elementary school teachers (31,327 - growth rate 4.4%), accountants (20,574 - growth rate 1.6%), blue collar supervisors (35,165 - growth rate 6.4%), assemblers (22,043 - growth rate 1.4%), delivery and route workers (22,731 - growth rate 1.7%), and truck drivers (28,719 - growth rate 2.7%).

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*Whether these occupations are growing at a rate showing little change over a longer period - say since 1960 was not ascertained for this preliminary report because of changes in definitions in 1972. The impacts of recent industrial changes have also not been included.

The aggregate target job openings of this group of six occupations was 43,515 by 1985, compared with employment of 160,559 in 1974, giving an estimated increase of 27% in target openings by 1985 (an index of 55). There are several other occupations with significant employment of 10,000 to 20,000 in 1974: restaurant, cafe, bar managers (10,775), shipping, receiving clerks (14,248), stock clerks, store keepers (13,356), checkers, examiners, etc. mfg. (17,944), police and detectives (13,087), construction laborers, except carpenters' helpers (14,804) and stock handlers (15,536). The remaining occupations with lower, 1974 employment levels in this slow growth group may be examined for their characteristics by reference to the occupations marked "S" in the appendix table.

d. Declining Occupations

(1) Subgroups With Negative Growth Rates

From occupations displaying positive growth rates the discussion turns to those with negative growth rates during 1974-1985. These occupations may be identified by the minus sign (-) before the numbers in columns 3 and 4 of the BLS forecast table in the appendix. About 135 occupations with negative growth rates have been identified. However, only two major groups, farmers and operatives showed declines in employment while there were as many as thirteen subgroups* with declining rate of change; largely concentrated in the blue collar occupations. Although these declining occupational groups included some growing occupations, the declining oocupations were more than offsetting. These thirteen subgroups constituted about 23% of total employment in 1974, and showed a growth rate of -6.6%, which reduced employment possibilities by about 30,700 openings. Still, deaths and retirements minus excess labor force raised the target openings to about 47,000 by 1985.

In most of the remaining subgroups, with increasing total employment, there are occupations with declining growth rates. Among these are the following: engineers, aero-astronautic; engineers industrial; engineers metallurgical; agricultural and biological scientists; farm management advisers; home management advisers;

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* Teachers; office machine operators; metal working crafts workers; printing trades craft workers; transportation and public utility craft workers; other crafts workers; semiskilled metal workers; semiskilled textile workers; other operatives, except transportation; protective and service workers; private household workers; farm workers and farm managers; farm cleaners and supervisors.

assessors, controllers; local public administration; officials and administrators, public; postmasters and mail supervisors; funeral directors; officials of lodges and unions; auctioneers; newspaper carriers and vendors; stenographers; file clerks; meter readers; postal clerks; statistical clerks; telephone and telegraph operators; ticket station, express agents; plasterers and apprentices; tilesetters; aircraft mechanics; auto accessory installers; loom fixers; railroad car repairers; graders and sorters; packers and wrappers, except meat and produce; health trainees; barbers; elevator operators; carpenters' helpers.

(2) Individual Occupations With Negative Growth Rates

The sum of workers in individual occupations with negative growth rates, taken separately rather than in subgroups, was 459,100 in 1974 and projected at 425,600 in 1985, a decline of 7.30%. These occupations represented 23.2% of 1974 employment and 19.5% of projected 1985 employment. Removing these occupations from the list of all occupations raised the growth rate of the remaining occupations to 11.8% compared with the average rate of growth of 10.1%.

Despite the decline in employment opportunities represented by these occupations, a sufficient number of labor force separations occurred , reduced by surplus labor for estimates for 1985, to provide an estimated net of 8,800 target job openings or 1.90% relative to 1974 employment in these negative growth rate occupations. This observation provides a clue to those occupations which, while declining in employment , still have positive target job openings despite reduction by estimated surplus labor force.

Taking the occupations with positive target job openings (but declining employment growth) provides a list of 45 occupations with an aggregate of 48,950 openings forecast for 1985. These occupations are listed in Table A5-N. The most significant occupation in this group is bookkeepers with 17,180 openings, reflecting the many individuals who had been employed in this occupation as well as the magnitude of employment needs still in it. With a growth rate of -0.4, bookkeepers may even be thought of as a stable occupation over this period, given possible margins of error which are inevitable accompaniments of forecasts. A number of occupations in this list have target occupations in 1985 greater than 1,000, namely: officials; administrators, public; file clerks; statistical clerks; telephone operators; packer, wrapper, except meat, produce; winding operatives, etc.; miscellaneous machine operatives; guards, and private household cleaners and servants.

The growth rates, 1974-1985, for occupations with negative growth rates in the United States as a whole, are also listed in Table A5-N. By and large, these occupations show positive growth rates. Only the following occupations in the United States show negative growth rates: funeral directors; telephone operators; furriers; shoe repairers; bottling, canning operatives; dressmakers, except factory; filer, sander, polisher, buffer; child care worker; cook, private; housekeeper, private house; private household cleaners, servants; longshore workers, stevedores; farm labor supervisors; farm laborers, unpaid family.

Table A5-N

Occupations with Negative Growth in Employment but Positive Target Openings Philadelphia SMSA, 1974-1985

Occupations	Employment Changes in Percent 1974-1985 United States	 Phila. SMSA	Target Openings in 1985
Agricultural scientists	6.90	-5.2	8
Biological scientists	27.81	-3.0	206
Assessors, control, local public	29.20	-6.7	145
Officials, administrators, public	26.88	-2.2	1,143
Funeral directors	-6.32	-1.4	222
Officials of lodges, unions	29.58	-0.9	296
Auctioneers	13.35	-1.3	30
Bookkeeping, billing operators	8.63	-4.4	484
Bookkeepers	10.95	-0.4	17,181
File clerks	15.95	-1.0	4,995
Messengers and office helpers	6.96	-9.4	277
Statistical clerks	15.74	-0.8	3,586
Telephone operators	-1.28	-12.3	2,511
Ticket station, express agents	16.36	-8.5	159
Tile setters	11.90	-1.5	4
Rollers and finishers, metal	4.29	-2.7	11
Bookbinders	6.05	-10.3	98
Furriers	-13.04	-20.8	24
Inspectors, other	17.34	-5.0	225
Piano, organ tuners, repairers	0.00	-11.5	39
Shoe repairers	-10.03	-21.3	37
Sign painters and letterers	33.67	-3.4	74
Upholsterers	1.85	-3.3	174
Furnace tenders, smelters	9.12	-1.6	44
Graders and sorters, mfg.	2.61	-4.2	184
Packer, wrapper, except meat	6.53	-3.3	5,554
Bottling, canning operatives	-3.89	-3.5	181
Cutting operatives, n.e.c.	10.87	-7.0	391
Dressmakers, except factory	-1.72	-20.5	486
Filer, sander, polisher, buffer	-6.46	-4.4	96
Riveters and fasteners	6.13	-4.3	39
Sawyers	4.23	-1.5	53
Winding operatives, etc.	24.32	-2.4	156
Misc. mach. operatives	6.41	-4.7	1,582
Parking attendants	7.16	-1.0	257
Crossing guard, bridge tenders	20.84	-10.0	683
Guards	7.40	-9.1	3,752
Sheriffs and bailiffs	35.19	-1.9	246

Table A5-N
(continued)

Occupations	Employment Changes in Percent 1974-1985 United States	Phila. SMSA	Target Openings in 1985
Child care workers	-31.75	-30.3	92
Cooks, private	-24.24	-22.4	208
Housekeepers, private house	-23.40	-21.8	461
Private household cleaners, servants	-22.49	-21.0	2,472
Longshore workers, stevedores	-9.76	-6.5	40
Farm labor supervisors	-20.59	-4.1	19
Farm laborers, unpaid family	-26.60	-7.8	23

Chapter 6: Summary and Conclusions of Part A

1. Occupations in Sampled Industries

This analysis of Part A comprises a discussion of trends in the industrial base and developments in the employment by occupation for the Philadelphia SMSA.

A study of the industrial base, presented in Chapter 2, found that the forecasts of the Bureau of Labor Statistics may have been too optimistic, their conclusion provides this basis for new forecasts to be prepared for a subsequent report. One important basis for this conclusion is that Philadelphia's manufacturing base is declining. Among the reasons for this decline are: (1) Philadelphia has a relatively high cost of doing business; (2) manufacturing plant and equipment stocks seem relatively old; (3) the older age of the capital stock results in relatively lower productivity levels; (4) a shift is taking place from relatively labor intensive to relatively capital intensive industries; (5) thus the composition of manufacturing industries is changing dramatically in the direction of high output per employee industries. This movement is illustrated by the growth in the chemical (SIC 28) industry and the declines in the textile (SIC 22) and apparel (SIC 23) industries; (6) these trends seem to suggest that jobs will be available from labor force separations due to deaths, retirements, quits and other reasons; (7) a consequence of the shift to higher productivity industries will increase the demand for lower skill employees, again illustrated by the occupational requirements in the chemical (SIC 28) and apparel (SIC 23) industries. The result is a growing pool of semiskilled and unskilled labor.

Inasmuch as the BLS forecasts do not provide data on the racial and sexual distribution of employment in Philadelphia's work force, by occupation and industry, the reports for large firms of the Equal Employment Opportunity Commission (EEOC) were examined. These reports provide data on occupations, by sex and by race, by industry. Three industries were examined in order to sample the employment changes between 1966 and 1973 by race and sex: chemicals and allied products (SIC 28), electrical machinery (SIC 36) and contract construction.

Minority employment in the occupations of the chemical industry experienced expansion in white-collar jobs, which experienced overall growth. The share of minorities doubled in the craftsman group, while that group overall employment experienced a decline. These movements were at the expense of employment in the operative and labor group.

The electrical machinery industry experienced some growth in the skilled and semiskilled occupations at the expense of white-collar employment, but minority employment expanded its share far beyond the average growth for the craftsman group.

In contrast to the shift of minorities to white-collar occupations and the more skilled groups in the chemicals and electrical industries, an opposite shift of employment of minorities to semiskilled and unskilled occupations occurred in the contract construction industry.

Among females there are pronounced shifts away from the traditional occupations employing females, such as clerical and operative jobs to other white-collar jobs.

The sampled data briefly summarized above call attention (1) to the need for the training agency to adjust its programs to the shifting occupational choices which workers seem to be making; (2) more specifically, the employment needs of minorities and women should be carefully attended to; (3) while at the same time the specific occupational requirements of particular industries should be examined for their educational and training content; (4) the data required for these judgments are presumably being generated in the occupational information system and should be available over the next several years for manufacturing, trade and service industries for 1500 to 2000 occupations; (5) the second year of the present project should develop the occupational detail among industries which was outside the scope of the first year's work.

2. Occupational Trends in all Industries Combined

The major task of the first year's study was to compare eighth and ninth grade students' needs and desires in terms of their occupational choices with the employment forecasts in 1985 for many occupational groups and individual occupations. The student needs survey and occupational choices are discussed in Part B. The occupational employment forecasts are the principal subject matter of Part A.

a. Socioeconomic Groups

Chapter 4 of Part A takes up broad shifts in employment in major occupational categories classified into socioeconomic groups as well as vocational education clusters. Two broad conclusions seem to emerge from the study of these major classifications: (1) while employment was forecast to be 10.1 percent greater in 1985 than in 1974, target openings at the rate of about 50 percent were shown. This is due to two adjustments: (a) labor force separations were added to the growth of employment thus expanding job openings, and (b) there is a substantial mismatch between employment forecast in 1985 and the labor force potentially available for occupations in 1985 based on the 1974 occupational distribution. This implies that (2) substantial shifts are taking place among the occupational classifications. Differential rates of change in target openings substantiate the evidence based on potentially excess labor force. White-collar and service occupations show above average growth while the operatives and laborer groups reveal growth rates at the lowest levels. These results give added weight to the conclusions of thestudyofsampled industries, namely that profound mismatches seem to be taking place between jobs now held and requirements in the future.

b. Vocational Education Clusters

About 60 percent of all occupational employment in 1974 is assigned to 14 vocational education clusters established by the Philadelphia School District for program purposes. About 33 percent of the 1974 employment was concentrated in five vocational education clusters with an increase of almost 100 percent in target openings forecast for 1985. These groups had a labor force deficit in 1985. The remaining nine clusters were expected to grow at the rate of only 20 percent. A labor force deficit is forecast for this group. The conclusion substantiates the conclusion based on industrial and occupational changes discussed above, that educational and training programs will be profoundly affected by the occupational requirements forecast for 1985.

c. Emerging and Declining Occupations

Occupational shifts imply forecasts of differential rates of growth of employment and target openings in the individual occupations as was illustrated in the conclusions based on the analysis of broad occupational groups. An empirical classification of occupations was adopted in order to take a closer look at individual occupations for the purpose of facilitating the modification of clusters in response to shift in employment. Seven groups of growing occupations were identified:

(1) two groups of so-called emerging occupations, comprising occupations having .01-.19 percent of target occupations in 1985; and five groups of more or less rapidly growing occupations, from above average to below average growth rates. Finally, occupations with negative growth rates were identified. A group with positive target openings was differentiated from that group of occupations where even target openings were negative.

Two kinds of changes in educational programs might result as a consequence of the multitudinal changes which will occur: (1) a shift in emphasis might be undertaken in programs, e.g., some programs reduced and some expanded; and (2) totally new educational programs and clusters might be put into place, while others are wiped out.

PART B

THE STUDENT NEEDS SURVEY

PART B

Preface

Two divergent and potentially contradictory views of the role of education in a democratic society characterize the demands that both educators and the public have made on the educational system. The purpose of education, in the traditional view, is to enable every individual to develop his/her potential to the fullest extent and to prepare for a satisfying and productive life. The goals of the educational system, from this perspective, are to provide young people with a set of democratic values, basic skills in mathematics and communication, an understanding of the nature of their physical and social environment, an appreciation of the culture and history of mankind, and an awareness of their responsibilities as citizens (cf., Schaefer and Kaufman, 1971). While the indirect contribution of education to the economic welfare of the nation is acknowledged, the primary purpose of education from this point of view, is to afford each individual the opportunity for broad intellectual and cultural development.

In the early years of the twentieth century, a competing view of the purpose of education emerged -- that of increasing "the efficiency of industrial society by the proper selection and channeling of national manpower resources" (Spring, 1976: 2). From this perspective, the educational system is viewed as "a 'brain power industry' whose social function is to develop human beings as instruments for building national economic and military strength" (Coombs, 1960: 26). This view of the educational system as a "sorting machine" whose primary purpose is to provide an increasingly sophisticated business and industrial structure with appropriately trained manpower led to several important educational innovations in the early decades of this century. These included the junior high school, whose original purpose was to facilitate the differentiation of students into separate courses of study according to abilities and vocational goals; vocational guidance; intelligence testing and the grouping of students according to ability; and the separation of high school students into differentiated curricula according to future occupations. Schools were given "the responsibility for determining student abilities and interests and channeling students through an educational program that would lead them to a specific slot in the national labor force" (Spring, 1976: 2).

While the two views are not mutually exclusive, they do imply divergent sets of educational priorities. The dominant focus of national educational policy since World War II has been on the manpower channeling aspects of education. Ability grouping in the junior high schools and vocational differentiation within the high schools already existed, but these features of the educational system were strengthened after 1945. The manpower needs of the cold war and the resultant national concern with the discovery and education of talented youth led to the National Defense Education Act of 1958. This Act provided federal grants to states for improved testing programs, guidance and counseling services (Title V) and federal funds for the teaching of science and mathematics to academically oriented youngsters (Title III). While limited federal funding of vocational education programs continued through this period, the major emphasis of national educational policy was on discovering and educating talented youth to fill positions in the scientific and national security establishments. Financing the education of less academically-oriented youngsters was left to the states and local municipalities.

National concern over the persistent joblessness of young people in the late fifties and early sixties resulted in passage of a national Vocational Education Act in 1963. Federal expenditures for vocational education, which amounted to $48 million in 1961, increased dramatically. The Act authorized the appropriation of $60 million for fiscal year 1963-64, $188.5 million for 1964-65, $177.5 million for 1965-66, and $225 million for each successive year. Nevertheless, the problem of unemployment among youth persisted into the seventies.

Following the student protests of the late sixties and early seventies and the continued high unemployment of young people, federal support for education was broadened in the 1972 amendments to the Elementary and Secondary Education Act to include career education. The Federal government, attributing the disenchantment among youth to the apparent failure of the schools to prepare them for successful experiences in the labor market, supported the development of career education programs and urged the elimination of educational programs, such as the general curriculum, not geared to entry into the labor market or into higher education.

Thus national education policies in the last three decades, embodied in federal support for vocational guidance, tracking in the comprehensive high schools, vocational education programs and vocational high schools, and career education programs, have emphasized the manpower channeling functions of the educational system, rather than its role in developing creative and informed individuals. Policies such as those supported by the Federal government, however, need not necessarily conflict with the role of education in contributing to the development of the individual. Enabling individuals to realize fully their potentialities clearly encompasses preparing them to engage in productive activity, both in order to earn income and for the satisfaction which creative activity brings. And yet, a conflict does exist.

A major source of this conflict between the disparate roles that education plays can be found in the failure of the economic system to provide meaningful jobs at adequate wages in sufficient number to employ the entire labor force. As a consequence of this failure the educational system finds itself, despite whatever efforts it makes, channeling large numbers of young people into unrewarding, unproductive lives on the margins of corporate society, with only sporadic employment in low-wage, low-skill jobs open to them. The educational system finds itself charged with sorting out the winners and losers in the good life contest, with the fact that there will be losers conditioned not on its own performance but on the performance of the economic system.

Nor does this sorting occur randomly, with winners and losers distributed in the same proportions among all segments of the population. On the contrary, the losers are to be found in disproportionate numbers among the urban poor, and among blacks, browns, Chicanos and others who suffer discrimination.

The educational system is further constrained in its efforts to develop individuals who will live satisfying, productive lives by the fact that the students it prepares must ultimately seek employment in a labor market whose structure is segmented and hierarchical. Fulfilling its manpower development function requires that the educational system channel students into particular segments of the labor market: into low-skill or unskilled jobs, into semi-skilled white collar jobs, or into highly skilled factory jobs -- all of which offer little chance of advancement; into white collar and supervisory jobs with occupational mobility ladders; or into the elite positions in the professions and industry. Here, again, the sorting is not random. The assignment of students to the curriculum that will prepare them for entry into the labor market occurs largely on the basis of class.

In a recent study of directions for vocational education, Schaefer and Kaufman (1971: 4,5,7) argue that

> a continuation of curricula along conventional lines will lead to a sharp division in our society based on class lines or family origins, rather than on the basic potential of the individual.
>
> ...
>
> Middle class children tend to attend their local schools, to enroll in the academic (college preparatory) curriculum, and to move on to college or some form of post-secondary education. Children of working class families tend to be moved into the vocational track and to end up in the working-class themselves, being denied the opportunity of upward mobility.
>
> ...

> The track system in most comprehensive high schools tends to reflect the class structure in the community. The youngsters from the more privileged homes usually are found in the college preparatory curriculum. The less privileged, less academically oriented youngsters who have strong occupational motivation, gravitate towards the vocational education curriculum. The others either end up in the general curriculum through default or escape it by taking the vocational education program which they find least unattractive.

Given the shortage of adequate jobs and the segmented labor market, an educational system oriented toward the channeling of national manpower resources will find itself unable to provide children and youth with equality of opportunity for either personal development or economic rewards. It will function, whatever its motives, to channel young people into social and economic roles largely predetermined by their race, sex and/or class status. And it will be seen by the urban poor and by minority group members as a major impediment to meaningful jobs for their children.

In addition, changes in hiring practices have reinforced the role of the educational system in the channeling of manpower. Carnoy (1975) argues that with the schools actually succeeding in recent decades in keeping more young people in school for longer periods of time, the number of people completing a given number of years of schooling or obtaining a given degree has increased faster than the number of jobs requiring increased amounts of education for satisfactory performance. As a result of this imbalance, employment requirements have been upgraded and the certificate or degree necessary to get a particular job has been raised. Often, the level of certification has little to do with the actual requirements of the job; but certification is widely used by employers as an inexpensive screening device. High school graduation is often set as the minimum requirement for employment, even in jobs where far less education would be adequate.

This phenomenon increases the frustrations of the poor with the schools by making successful completion of 12 years of education a prerequisite for employment while at the same time ruling out increased schooling as a general solution to the unequal distribution of income. Poor people find that increased schooling cannot result in upper-level jobs for everyone when there are lower-level jobs to be filled by someone; instead, rising credentials requirements wipe out the potential gains. Nor can increased schooling end unemployment if there are not enough jobs for everyone; it can only raise the educational level of the unemployed. Nevertheless, the acquisition of higher levels of schooling remains the best strategy by which the individual can increase his/her income. Though education has little impact in reducing differentials between black and white, male and female, working class and middle or upper class, within race, sex and class groupings higher earnings and steadier employment are related to educational attainment.

This, then, is the dilemma. In the context of a chronically malfunctioning economy and a hierarchical and segmented labor market, national educational policies geared toward increasing the efficiency of the manpower development and channeling functions of the educational system have conflicted with the traditional educational goals of developing fully the human potentialities of each child and of preparing him/her for a satisfying life. The schools cannot solve society's problems and, in fact, despite the best intentions of educators, ends up functioning as a "sorting machine" separating winners from losers and channeling new additions to the labor force into slots largely predetermined by race, sex and class. Yet, it is not possible to abandon the system of education. For, within these limits, more education does make a difference, yielding better wages and less unemployment to those who attain it.

This analysis suggests that educators and others responsible for formulating andimplementing policy at the school district level have only limited scope for effecting equality of outcomes for students. However, it most emphatically does not imply that policies adopted at the local level do not affect the welfare, present and future, of the children in the community. Schools cannot resolve the broad social and economic problems confronting society. In the face of segmentation in the labor market they cannot provide equality of outcomes irrespective of race, sex or social status for all children. Still, the schools are not powerless to affect the outcomes that children will experience, and it would be irresponsible of them not to resist becoming merely a channeling device for the corporate economy.

The research reported in this volume was undertaken with these considerations in mind. Administrators in both the vocational education and career development and education components of the Philadelphia School District have shown sensitivity to the kinds of policy issues raised here. In recent years the options for students in the vocational education programs have been broadened in several ways. Two important innovations have been the cluster concept in which students receive education and training applicable to a related group of occupations and trades, and the construction of skills centers which allow students to take academic courses at a comprehensive high school while receiving vocational training in modern, well-equipped, well-staffed facilities.

As for the other two policy concerns -- ascertaining and meeting the needs, interests and aspirations of students, and preparing students for employment in decent jobs -- this project was commissioned by the Philadelphia School District to gather data and prepare recommendations that could speak directly to these issues.

Major emphasis in Part B is on ascertaining student needs, interests and aspirations, and in recommending ways of meeting them. Three chapters in this Part are devoted to a preliminary analysis of the Student Needs Survey conducted in Spring, 1977. A more complex analysis, together with appropriate recommendations, will be available in September, 1978.

Finally, this project developed forecasts of employment by occupation for the Philadelphia SMSA to 1985. Based on these results, which were presented in Part A, educational requirements to meet the manpower needs of the Philadelphia SMSA were derived and are presented in Chapter 2 of Part B of this report.

PART B

Chapter 1: Introduction and Overview

I. Introduction

Public school personnel responsible for career development and education or for vocational education are charged with the difficult task of increasing the contribution that education makes to the ability of students to choose a career and pursue it successfully. Programs, both in career development and education and in vocational education are designed to facilitate the transition from school to work. Vocational education, as the term is used by the School District of Philadelphia, refers to "a program of studies designed to prepare a student for entry into a given occupational field..." The vocational education programs are structured according to clusters within which learning activities are organized "around related groups of occupations or trades." The objective of vocational education is "gainful employment" of students enrolled in such programs. Career development and education are much broader concepts, applicable to all students whether or not they are enrolled in vocational education programs. Career development emphasizes "exposure to the world of work" and the development of such concepts as "occupational, self and economics (sic) awareness, community awareness, educational relevance, interpersonal relationships and positive attitudes." Career education "provide(s) students with opportunities for gaining knowledge and experience in (these) career development concepts." While the focus of this project has been on improving the effectiveness of vocational education in preparing students for gainful employment, the substantial overlap in interests and informational needs of the vocational education and career development and education components of the public school system suggest that our findings will have major applications in both areas.

The vocational education component has several identifiable goals, the most important of which are (1) agreement of course offerings with aspirations, interests and needs of students, (2) agreement of student enrollment within clusters with the pattern of employment of skilled workers, (3) appropriate allocation of the resources of the school system to the vocational education program and, within that program, to particular clusters, (4) satisfaction of student occupational aspirations, both pecuniary (in terms of the adequacy of earnings) and nonpecuniary (in terms of the intrinsic rewards derived from doing the work), and (5) improvement of students' knowledge of the world of work and perceptions of job opportunities through career development and education.

It is unlikely that all of these goals can be fully attained, partly because of resource limitations, but perhaps also because of direct incompatibility between some goals. Decisions will undoubtedly have to be made to "trade off" worse attainments of some goals in order to achieve better attainments of others. The informational requirements of those with responsibility for making informed decisions and formulating appropriate policies are extensive, encompassing

1) the need to know the pattern of employment opportunities that is expected to exist when students currently enrolled in secondary schools enter the labor market and embark on their careers;
2) the need to identify the pattern of required levels of general education and specific vocational skills implied by the emerging pattern of employment opportunities in order to allocate staff, facilities and other resources among academic, vocational and general courses and within vocational education, to specific clusters;
3) the need for a heightened understanding of the over-all process of individual career choice and attainment, and of the role of the educational system in that process; and
4) the need to determine the amount and kind of preparation that students require in order to enter and advance in their chosen careers.

Beyond this, school administrators require a decision model that will allow them to use this information to determine the extent to which each of their separate goals is to be fulfilled. The objective of such a model is to target the level of attainment for each goal in such a way as to minimize the losses due to the fact that some goals may not be fully attained.

Part A of this report has been concerned with the structure of economic activity in the Philadelphia SMSA and with developments in the labor market. Occupational requirements have been forecast, emerging and declining occupations have been identified, and a matrix of potential employment by occupation has been derived. Thus the first of the informational requirements has, subject to further refinements of the analysis and the forecasts, been satisfied. In this Part, the three remaining informational needs are addressed. The data presented and analyzed here will ultimately be used in specifying the vocational education decision model. Of equal importance, however, is the direct and immediate use to which the information presented here on occupational aspirations, occupational expectations, educational aspirations and the process of occupational choice can be put by vocational guidance counselors and career development and education personnel. Already, the data presented have been utilized in the development of a proposal for a federally-funded program of in-school work experiences for secondary school students. Finally, in Volume C the nature of decision models is discussed, and preliminary versions of some of the inputs into the decision model being developed are presented.

II. Plan Of Part B

The next section of this chapter describes the Student Needs Assessment Survey of 1070 eighth and ninth graders in the Philadelphia public schools. That survey generated much of the data that will be used in the analysis presented in subsequent chapters.

In Chapter 2 the "manpower requirements approach" to the allocation of resources within education is developed. In that approach, estimates of the years of schooling required for entry into and satisfactory performance of each of the occupations in the Philadelphia economy are utilized to determine the overall pattern of educational needs from a manpower perspective. The educational requirements implicit in the occupational aspirations of the students are derived in a similar manner. These are then compared with labor market requirements and with the students' professed goals.

Chapters 3 and 4 present and analyze data from the Student Needs Assessment pertaining to occupational aspirations, occupational expectations and educational plans. In Chapter 3 the socioeconomic and demographic characteristics associated with educational plans are presented, while Chapter 4 examines the association between these characteristics and occupational aspirations. While the findings of these two chapters are expected to be of immediate use to school administrators and guidance counselors, we would like to emphasize that they are preliminary in two important respects. First, financial constraints limited the student population included in the survey to eighth and ninth graders. In the second year of this project the survey will be extended to tenth grade students, and in the third year to eleventh. Secondly, a more sophisticated analysis of occupational choice by adolescents, with appropriate controls for socioeconomic, demographic and cognitive influences, will enable us to make a more definitive statement about the role of the educational system in that project.

In Chapter 5, the findings of this part of the study are summarized and several uses of the data by school personnel are suggested. In addition, refinements and extensions of the analysis to be carried out in the second year of the project are outlined.

Finally, the appendix tables will present a breakdown of the answers to each of the 61 questions in the Survey by race, sex and grade.

III. Methodology

a. Sampling Design and the Sample

The student needs questionnaire was administered to 1070 eighth and ninth grade pupils from the Philadelphia school system. Analysis of the sample's demographic characteristics indicates that the sampling procedures produced a remarkably representative selection. The sample is 37% white, 57.2% black, 3.2% Spanish surname, 0.7% American Indian, 0.8% oriental, and 1.0% who chose to list themselves as "other." Further, the percentages of males and females are 46.3% and 53.7%, respectively. These figures correspond closely to the system's population parameters for these grades (see "Enrollment 1976-1977 Philadelphia Public Schools" by the Division of Survey and Administrative Research Services, Philadelphia Board of Education).

The sample design required a three stage process: (one) the city's public schools were stratified according to geographic location (i.e. district), grade levels, racial composition, curriculum, and social class composition; (two) nineteen schools were chosen to provide a representative sample of the system; (three) within each school, two, three or four classes were selected to receive the interview schedules. Each chosen school was asked to provide either "average" classes or, when three or more classes were used in one school, to provide classes spanning the ability range of the school's enrollment.

Only two schools refused to participate. Fortunately these were in areas where we had selected more than one school and/or where we could add another school of similar composition. The final sample includes schools from all of the city's eight school districts. The participating schools are:

Shaw (111)
Audenried (210)
Vare (212)
Masterman (214)
Bok (306)
Thomas (313)
McCall (334)
Dobbins (406)
Gillespie (412)
Penn Treaty (511)
Leeds (610)
Henry (625)
Harding (711)
Olney - Wyoming (750)
Washington (803)
Wilson (812)

b. Administration of the Interview Schedule

Ideally we would have randomly selected students from each of the eighth and ninth grade populations. Also, ideally, each student would have the interview schedule individually administered. These procedures, however, would have greatly exceeded the budget. On the other hand, the least expensive method of administering a questionnaire - a totally self-administered document distributed to the classrooms - was equally unacceptable. Many of the students have poor reading skills and or difficulty interpreting questions. Much of the data would be meaningless or incomplete.

Thus, we compromised. We developed a system that provided the economy of group administration with the advantages of some one reading the interview schedule to the students and responding to questions and problems. To accomplish this, we hired and trained six interviewers to administer the interview schedules to the 49 student groups. The interviewers rehearsed standardized instructions and explanations for each question. For each class, questions were read out loud to the students, stopping when necessary to repeat, explain or interpret. Every student had a copy of the interview schedule on his/her desk.

Undoubtedly, there are drawbacks with our group administration of the survey instrument. Some students may have been reluctant to ask for clarification in the presence of their classmates. Occasionally, a student would be very late to class and thus miss the earlier questions. On a few occasions, a student would fall behind the others in completing the answers. We attempted to deal with these problems by keeping the interview sessions at least ten minutes less than the class periods, thereby allowing the interviewer to help individusl students who were shy, slow or late. While this reduced the possible number of questions included in the survey, we feel the advantages to the quality of data outweighs the limitations.

c. The Interview Schedule

The target population's reading and writing ability, combined with the necessity of group administration, required some modifications to conventional questionnaire design. "Skip patterns" were deemed generally too complicated for the sample and were limited to just one (i.e., the skip of the four questions dealing with work in relation to child rearing). Open ended questions were restricted to requests for job titles, school names, and the number of siblings.

We utilized the results of the pretest[*] to create fixed choice questions for several items that were originally open ended. Analysis of the pretest also suggested several modifications of questions and elimination of others. A copy of the interview schedule is appended to this report. As can be seen, a variety of question formats were used to ascertain the students' perceptions, beliefs and orientations about work. Because of the youth and inexperience of the sample several questions were hypothetical. Whenever possible we personalized the issues, e.g., asking them to respond to statements like "if I can't find a job I see nothing wrong with receiving money from the unemployment office" rather than "do you think it is wrong for unemployed people to receive money from the government."

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[*] The pretest was conducted at the Sayre Junior High School on two eighth and two ninth grade classes. In addition, many interviews were conducted with informal groups of eighth and ninth graders.

In addition to the questions listed on the schedule, there are spaces allocated for other data to be provided by the school system. These data are: the students' census tracts, eighth and ninth grade California Achievement Test scores, ZIP codes, and identification numbers. The census tracts andZIP codes allow a general measure of economic standing for the students' families. The CAT scores provide standardized test results for comparisons with data from the interview schedules. The identification numbers are required to access the CAT scores and will enable us to perform a follow-up study if so requested.

d. Summary

The sample provides a fairly representative group of students from which we may, with appropriate caveats, generalize to the Philadelphia eighth and ninth grade public school populations. Indeed, the results of this study are probably relevant for many large American school systems.

The administration of the interview schedule was accomplished within a limited budget but appears to have allowed for individual students' problems and questions. We intend to employ a similar format when we resume testing in the Fall of 1977.

PART B

Chapter 2: Educational Requirements

Educational planning is undertaken so that schools can better achieve the dual objectives of (1) meeting the manpower needs of the community and (2) encouraging individual self-fulfillment. In order to determine the educational requirements implicit in the community's need for trained manpower, we have first forecast the occupational structure of the Philadelphia labor market and then determined the educational and training requirements demanded by that structure. It is a much more difficult matter to assess the educational requirements for meeting the second of these objectives, since no unambiguous determination of how much education each individual "needs" can be made. We have approached this question by asking students about their occupational aspirations, and then determining the educational requirements for entry into these desired jobs. While this is an incomplete assessment, since it ignores those contributions which education makes to the quality of each individual's life that are neither directly nor indirectly related to preparation for a career, it does allow us to evaluate one major component of student educational needs.

Both of these approaches to assessing educational requirements are developed in this chapter. Manpower requirements are presented first, after which the occupational aspirations of the students are discussed. The wide disparity between the high aspirations of young people and the requirements of society, which has recently become evident in the national data, is confirmed by the figures for Philadelphia. This disjunction between aspirations and opportunities raises grave problems for responsible educational planning by the Philadelphia School District. We conclude this chapter with some guidelines, from an economist's perspective, to an appropiate response by the schools.

Educational Requirements and the Manpower Needs of the Community

The manpower requirements approach, which has frequently been used in educational planning (Eckhaus, 1964; Scovile, 1966, Parnes, 1968; Bowles, 1969; and Buechner, 1972), involves specifying educational requirements for each of the occupations listed by the Census Bureau. Once the requirements for all the individual occupations have been determined, the overall pattern of educational and training needs in Philadelphia can be derived from the distribution of employment in the Philadelphia SMSA among occupations.

The usual method of specifying educational requirements is to identify the levels of proficiency in reasoning skills, language skills and mathematical skills required to perform adequately in each of the 4,000 jobs listed in the Dictionary of Occupational Titles, and to translate these levels of proficiency into years of schooling required for occupations identified by the Census Bureau. Specifying educational requirements in this way measures the amounts of education that are effectively used in the operation of the economic system.

However, it is widely recognized that employers often demand a high school or college diploma (the so-called sheepskin effect) for entry into jobs. This is true even when the skill content of the jobs does not seem to warrant either the degrees or the years of schooling required as a prerequisite for employment. For example, 50 percent of the jobs in the American economy in 1960 could have been performed adequately by someone with 9 to 11 years of schooling, and only 18 percent of the jobs required 12 years or more of education for satisfactory performance. Employers, however, filled 47 percent of the jobs with individuals who had completed 12 or more years of schooling, and only 22 percent of the jobs with persons with 9 to 11 years of education (Buechner, 1972; 207).

We have chosen therefore, to estimate educational requirements by using the "Preferred Level of Institutional Preparation" which is published by the Pennsylvania Department of Labor and Industry for most of the Census occupations.* Derived from information published in the U.S. Department of Labor's 1976-77 Occupational Outlook Handbook, this measure of educational requirements is based on the amount of education and training generally required (or preferred) by employers for entry into and advancement in an occupation. The levels of institutional preparation distinguished are high school graduation, vocational-technical-business education or apprenticeship training, associate degree, bachelors degree and post-graduate education.

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*The preferred level of institutional preparation is published for more than three-fourths of these occupations. Educational requirements for the remaining occupations were determined by us, and are available upon request.

Table B2.1 presents the percentage distribution of employment and job openings (target levels of projected employment opportunities) by preferred level of institutional preparation over the period 1974-1985. These levels of employment and job opportunities in each occupation were developed in Part A, and explanations of their derivation can be found there. The occupations were then grouped using the preferred level of institutional preparation. The total number of job openings between 1974 and 1985 requiring post-graduate education, bachelors degree, associate degree, vocational-technical-business education or apprenticeship training, or high school graduation were then obtained. The percentage distribution of employment opportunities by preferred level of education was then computed. In addition, the distribution of actual employment in 1974 and projected employment for 1985 by preferred levels of education are shown in this table.

Despite the fact that the occupational structure of the Philadelphia SMSA has undergone dramatic shifts since 1960, away from the older manufacturing occupations and toward service occupations, the educational requirements demanded by the occupational structure appear to have stabilized by 1974. Table B2.1 shows that the proportions of jobs requiring each level of institutional preparation are virtually unchanged between 1974 and 1985, though employment is expected to grow from 1.98 to 2.18 million. Jobs requiring four years or more of college education account for about 15 percent of employment in both years, while jobs requiring an associate degree account for almost 11 percent. Almost one-fourth of the jobs in both years require training beyond the high school diploma, either in a technical, vocational or business school

Table B2.1

DISTRIBUTION OF EMPLOYMENT AND JOB OPENINGS BY PREFERRED LEVEL OF INSTITUTIONAL PREPARATION, PHILADELPHIA SMSA 1974-1985

Preferred Level of Institutional Preparation	1974 Employment		1985 Employment		Average Annual Target Openings 1974-85 (Growth plus labor force separations)	
	Number	Percent	Number	Percent	Number	Percent
Post-graduate degree	51,224	2.6	64,258	2.9	2,690	2.7
Bachelors degree	246,753	12.3	275,062	12.5	12,365	12.3
Associate degree	212,159	10.6	235,508	10.7	10,910	10.8
Technical, vocational, business school or apprenticeship training	471,693	23.6	539,474	24.5	24,373	24.2
High school diploma incl. high school plus on job training	816,830	40.8	888,929	40.4	44,210	43.9
Less than high school diploma	202,809	10.1	194,808	8.9	6,174	6.1
All Occupations	1,983,438	100.0	2,183,117	100.0	100,451	100.0

or in an apprenticeship program. About two-fifths of the jobs require a high school diploma, though employers often prefer some on-the-job training or previous experience even for jobs like waitress or bus driver. The remaining 9 or 10 percent of the jobs are open to those who have not earned a high school diploma. The percentage distribution of job openings closely parallels the employment distribution: 15 percent of the job openings require four years or more of college, 11 percent require an associate degree, 24 percent require some formal training beyond high school, 44 percent require a high school diploma, and 6 percent of the openings can be filled by those with less than a high school diploma.

Table B2.2 presents employment and average annual job openings between 1974 and 1985 in each of the technical and vocational fields in which the Philadelphia school system offers training. Between 1974 and 1985, the proportion of total employment accounted for by service occupations* increased from 38 percent to 41 percent. During the same period, total employment increased by 10 percent. This growth in employment, together with the pattern of labor force separations in the service sector, explains the fact that 56 percent of the job openings between 1974 and 1985 will be in service occupations.

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*The service occupations are personal services, business data processing, secretarial, distribution, clerical and health services.

Table B2.2

DISTRIBUTION OF EMPLOYMENT BY VOCATIONAL EDUCATION CLUSTER

Vocational Education Cluster	1974 Employment		1985 Employment		Average Annual Target Openings 1974-85 (Growth plus labor force separations)	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number of Openings	Percent of Total
(1) Power Mechanics	52,503	2.6	55,158	2.5	1,232	1.2
(2) Manufacturing Electro-mechanical	18,906	1.0	23,255	1.1	728	0.7
(3) Building Construction and mainten.	145,363	7.3	159,883	7.3	4,814	4.8
(4) Communications	23,771	1.2	24,466	1.1	735	0.7
(5) Personal Services	215,106	10.8	236,156	10.8	13,742	13.7
(6) Metal processing	65,796	3.3	65,792	3.0	1,327	1.3
(7) Business Data Processing	58,541	3.0	69,931	3.2	3,380	3.4
(8) Secretarial	125,862	6.3	160,265	7.3	13,369	13.3
(9) Distribution	57,335	2.9	59,159	2.7	1,501	1.5
(10) Clerical	198,767	10.0	239,828	11.0	14,435	14.4
(11) Health Services	90,380	4.6	127,212	5.8	9,421	9.4
(12) Apparel Trade	57,391	2.9	44,219	2.0	1,428	1.4
(13) Drafting	11,367	0.6	13,938	0.6	407	0.4
(14) Agriculture	65,027	3.3	62,717	2.9	2,212	2.2
All Clusters	1,186,115	59.8	1,341,979	61.3	68,731	68.4
Other	797,323	40.2	841,138	38.7	31,720	31.6
Total Employment	1,983,438	100.0	2,183,117	100.0	100,451	100.0

Thus, while the pattern of educational requirements, as measured by the preferred level of institutional preparation, will not change much in this period, vocational education and career guidance programs must be cognizant of the continuing shift of employment opportunities to the service sector.

Another very important finding that emerges in Table B2.2 is that about 60 percent of employment in 1974 and 1985, and 68 percent of the job openings in the eleven year period between those dates, are in occupations in which the Philadelphia school system offers vocational training. This figure is much higher than the 24 percent of the jobs in Table B2.1 that required technical, vocational, or business school, or apprenticeship training, for two reasons. First, some of the occupations for which vocational education programs are available require a college education. This has been recognized by school system administrators who have expanded the academic course offerings at vocational schools and, most recently, have developed two skills centers that will provide vocational training for students while allowing them to pursue academic and other courses at a comprehensive high school. One result has been that fully one-third of the 1976 graduates of Philadelphia's vocational-technical high schools went on to college in the Fall of 1976 and more than three-fourths of these were enrolled in four year colleges (School District of Philadelphia, 1977). On the other hand, many of the occupations for which vocational education programs are available do not require specialized vocational training, but can be mastered on the job by someone with a high school education. This is particularly true of jobs in clerical or distributive (sales) occupations. The skills which many employers value are the ability to read, to write, to compute, to learn new skills and to work cooperatively and responsibly with others. Nevertheless, vocational education, when combined with a solid foundation in language, computational and study skills, may be useful preparation for entrance into a broad spectrum of post-high school education and employment experiences. From the point of view of labor market requirements, it is apparent that an expansion of the number of students receiving a vocational-technical education in high school would contribute to meeting the manpower requirements of the community.

A vocational education is particularly advantageous for those students who do not go on to college. The Philadelphia School District's own surveys of high school graduates indicates that among those who obtain employment following high school graduation, hourly wages are higher and unemployment is lower for graduates of vocational-technical high schools (School District of Philadelphia, 1977). Other studies (Hu et. al., 1971; Corazzini, 1968; Taussig, 1968; and Kaufman et al., 1967) indicate that among high school graduates who do not attend college, graduates of vocational-technical high schools earn more money and are employed a greater percent of the time than comparable graduates of comprehensive high schools. One study (Hu et. al., 1971) of 2,767 high school graduates (including graduates of Philadelphia high schools, although they are not identified by city in the article) found that in the first year after graduation students with degrees from vocational schools earned, on the average, $54 more per month than those from comprehensive high schools. (This is in 1967 dollars. Correcting for inflation, the difference in 1977 dollars would be about $75 a month.) The $54 represents the difference in earning that is attributable to differences in curriculum. It is net of the effects on earnings of such factors as sex, race, IQ, marital status and father's education.

The net effects of curriculum on earnings and percent of time employed by race and sex are presented in Table B2.3. One year after graduation white males who attended vocational schools earned $43 per month more than those who had gone to comprehensive high schools. After six years, the differential in favor of vocational education graduates was still $30 per month. The nonwhite male vocational education graduates also earn more than comparable comprehensive high school graduates -- $21 per month after one year and $61 per month after six years. (It should be noted, however, that the high variance in the earnings of nonwhite males prevents these large differentials from achieving statistical significance at conventional levels.) For the women, both white and nonwhite graduates of vocational schools earn significantly more after one year than do graduates of comprehensive high schools. Even in the sixth year after graduation, large differences in earnings persist for the nonwhite females. Similar differentials in percent of time employed can also be observed in Table B2.3.

Since the evidence indicates that vocational training contributes to meeting the manpower requirements of the community, and that in fact there is some evidence to indicate that the labor market rewards those who obtain it, the question that arises is why more students are not

Table B2.3

NET EFFECTS ON EARNINGS (IN DOLLARS) AND EMPLOYMENT (IN PERCENTAGE POINTS), VOCATIONAL VERSUS COMPREHENSIVE GRADUATES FOR SEPARATE REGRESSIONS BY RACE AND SEX

	First Year After Graduation		Sixth Year After Graduation		Average in Six Years	
Sample Groups	E[b]	N[b]	E	N	E	N
White male						
Comprehensive[a]						
Vocational	43	9.0	30	2.0	44	5.7
	(14)[c]	(3.0)	(16)	(1.8)	(14)	(2.1)
Nonwhite male						
Comprehensive[a]						
Vocational	21	9.0	61	7.1	49	9.7
	(27)	(8.7)	(38)	(5.5)	(29)	(6.1)
White female						
Comprehensive[a]						
Vocational	65	19.5	9	4.4	46	12.7
	(7)	(2.1)	(11)	(2.4)	(7)	(1.6)
Nonwhite female						
Comprehensive[a]						
Vocational	42	10.8	32	5.4	43	9.3
	(13)	(4.7)	(21)	(4.5)	(13)	(3.6)

[a] This regressor of the variable enters into the intercept term. The other regressors of the variable are interpreted as deviations from this regressor. The variables of labor market, IQ, marital status, and father's education are included in the equation, but coefficients are deleted in this table.

[b] Both *E* and *N* are dependent variables; *E* denotes average monthly earnings (in 1967 dollars) and *N* denotes percent of time employed.

[c] Values in parentheses are the standard errors of the coefficients.

source: Teh-Wei Hu, Maw Lin Lee and Ernst W. Stromsdorfer, "Economic Returns to Vocational and Comprehensive High School Graduates," Journal of Human Resources 6, 1971, p. 47, Table 7.

enrolled in such programs. The answer is multi-faceted: (1) Requirements for getting into vocational technical schools exclude the less able students. (2) Though academic courses are increasingly available at vocational schools, they do not compare in variety nor, with the notable exception of Saul Agricultural High School, in quality with those offered at comprehensive high schools. Thus students who expect to go on to college and who have been successful academically are reluctant to enter vocational-technical schools. (3) Adverse pressure from parents and school counselors often discourages students from choosing vocational education programs. (4) Furthermore, the costs to the school district of educating students in comprehensive high schools is only 60 to 70 percent of the costs per average daily attendance in vocational high schools (Stromsdorfer _et_. _al_., 1968). (5) Finally, one of the most important reasons that more students do not choose vocational education programs in high school is that the occupational aspirations held by students in the eighth and ninth grades, when the choice of high school is being made, often do not correspond to any of the 14 vocational education clusters in which programs are offered at Philadelphia vocational-technical high schools. The finding that labor market requirements favor the expansion and further upgrading of vocational-technical education programs is only one part of the story, therefore. Another very important part is to be found in the occupational aspirations of the students themselves.

Educational Requirements and the Occupational Aspirations of Eighth and Ninth Grade Students

The occupational aspirations of eighth and ninth grades are shown in Table B2.4. They were obtained from responses to the question: "What kind of job would you like to have when you are about 35 years old? You may answer housewife if that is what you would like to be doing."

The students generally chose glamorous or high status, financially rewarding occupations. Thus, doctor was the modal occupation. Ninety-eight students aspire to be doctors, dentists, optometrists or veterinarians, and 69 of these want to be MD's. Seventy-seven of the students desire careers as actors or as artists, writers, entertainers, models; and another 64 want to be athletes. Sixty want to be judges or lawyers, and 44 would like careers as engineers or scientists. Thirty-nine would like to own their own businesses.

Women as well as men aspire to high status jobs. Among the male students 7.7 percent aspire to be doctors, while among the female students 10.5 percent have such aspirations. Almost equal percentages of the young men and women surveyed, 5.4 and 5.7 percent respectively, desire to be judges or lawyers. Similarly 6.8 of the young men and 7.5 percent of the young women aspire to careers as actors, writers, artists, or entertainers. However, the young men were much more likely than the young women to want to be scientists and engineers, or to want to own their own business, or to hope for a career as a professional athlete.

Table B2.4

OCCUPATIONAL ASPIRATIONS OF 8TH AND 9TH GRADE STUDENTS, BY SEX

Occupational Aspiration	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Housewife	45	4.2	1	0.2	44	7.7
Accountant	14	1.3	5	1.0	9	1.6
Architect	15	1.4	13	2.6	2	0.3
Computer programmers	7	0.7	6	1.2	1	0.2
Computer analyst, specialist	4	0.4	1	0.2	3	0.5
Engineer	25	2.3	20	4.0	5	0.9
Judge, lawyer	60	5.6	27	5.4	33	5.7
Scientists	19	1.8	13	2.6	6	1.0
Doctor, Dentists, Optometrist, Veterinarian	98	9.2	38	7.7	60	10.5
Registered nurse	57	5.3	1	0.2	56	9.8
Other health specialist or technician	22	2.1	3	0.6	19	3.3
Psychologist	12	1.1	1	0.2	11	1.9
Social worker	11	1.0	1	0.2	10	1.7
Teacher	51	4.8	12	2.4	39	6.8
Technician	19	1.8	19	3.8	0	0.0
Writer, artist, entertainer, model	64	6.0	29	5.8	35	6.1
Actor	13	1.2	5	1.0	8	1.4
Athlete	64	6.0	59	11.9	5	0.9

Table B2.4
(cont.)

Occupational Aspiration	Total		Male		Female	
	Number	Percent	Number	Percenc	Number	Percent
Other prcfessional, technical	14	1.3	9	1.8	5	0.9
Manger, administrator Official	17	1.6	10	2.0	7	1.2
Proprietor	39	3.6	27	5.6	12	2.1
Sales worker	11	1.1	6	1.2	5	0.9
Secretary	64	6.0	1	0.2	63	11.0
Typist	3	0.3	0	0.0	3	0.5
Clerical worker, cashier, teller, stenographer, etc.	45	4.3	11	2.2	34	5.9
Construction craft worker	39	3.6	38	7.7	1	0.2
Mechanic, machinist	31	3.0	31	6.3	0	0.0
Misc. Craft worker	32	3.1	24	4.8	8	1.4
Operative exc. transport	14	1.3	10	2.0	4	0.7
Transport equipment Operative	16	1.5	15	3.0	1	0.2
Hairdresser	17	1.6	0	0.0	17	3.0
Health service worker	7	0.7	1	0.2	6	1.0
Police and fireman	15	1.4	12	2.4	3	0.5
Misc. Service worker	38	3.5	9	1.8	29	5.1
Farmer	2	0.2	2	0.4	0	0.0
Laborer incl. farm	16	1.5	12	2.4	4	0.7
Not codable	33	3.1	15	3.0	18	3.1
Don't Know	17	1.6	9	1.8	8	1.4
All Occupations	1,070	100.0	496	100.0	574	100.0

Considerable sex-role stereotyping in the choice of careers is evident in the responses of these students. Almost 50 percent of the young women aspire to the typically female occupations - nursing (9.8 percent), health technician (3.3 percent), social worker (1.7 percent), teacher (6.8 percent), hairdresser (3 percent), health or other service worker (6.1 percent). Very few women aspire to the typically male, non-professional occupations. Less than 4 percent of the young women want jobs as computer programmers, technicians, construction or other craft workers, transportation equipment operatives, operators of other equipment, or as police or firemen. Conversely, only 5.4 percent of the young men desire jobs in the predominantly female occupations.

It is notable that only 7.7 percent of the women would like to be home, caring for a house and family exclusively at age 35. This implies a planned labor force participation rate among these young women of 92.3 percent. Thus educational planning in the public schools must recognize the importance of preparation for education beyond high school and for entry into a career for women as well as for men.

The preferred levels of institutional preparation implicit in the occupational aspirations of these eighth and ninth graders is shown in Table B2.5. The fact that both male and female students aspire, in large numbers, to high status, financially rewarding careers is reflected in the associated educational requirements. Nearly equal proportions of young men and women desire jobs that require a bachelors degree or higher -- 38.7 percent of the males and 36.8 percent of the females. Similarly, sex-role stereotyping among youth who aspire to

Table B2.5

DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF 8TH AND 9TH GRADE STUDENTS BY PREFERRED LEVEL OF INSTITUTIONAL PREPARATION

Preferred Level of Institutional Preparation	Occupational Aspirations					
	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Bachelor's degree or higher	403	37.7	192	38.7	211	36.8
Associate degree	79	7.4	4	0.8	75	13.1
Technical, vocational, business school, or apprenticeship training	224	20.9	136	27.4	95	16.6
High school diploma, incl. high school plus on job training	253	23.6	127	25.6	119	20.7
Less than high school diploma	16	1.5	12	2.4	4	0.7
All Occupations	975	91.1	471	95.0	504	87.8
Housewife	45	4.2	1	0.2	44	7.7
Don't Know	17	1.6	9	1.8	8	1.4
Not Codable	33	3.1	15	3.0	18	3.1
Total	1,070	100.0	496	100.0	574	100.0

non-professional occupations is reflected in the fact that 27.4 percent of the men want jobs that require technical, vocational or business school, or apprenticeship training as compared with only 16.6 percent of the women. At the same time, 13.1 percent of the women aspire to careers that require an associate degree, while less than 1 percent of the men have such aspirations. The young women were somewhat less likely than the men to desire jobs that require no more than a high school diploma (20.7 percent as compared with 25.6 percent) or that require less than a high school diploma (0.7 percent of the female students as compared with 2.4 percent of the male students).

When the distribution of occupational aspirations of students by preferred level of institutional preparation (Table B2.5) is compared with the distributions of employment and job openings by preferred level of institutional preparation (Table B2.1), it is apparent that the structure of employment opportunities implies that many students will not achieve their career goals. Only 15 percent of the job openings in the years between 1974 and 1985 are in occupations requiring 4 or more years of college education, while 38 percent of the students in eighth and ninth grade aspire to such occupations. Conversely, 50 percent of the job openings require a high school diploma or less, while only 25 percent of the students want to hold such jobs.

The students' educational expectations are shown in Table B2.6. They were obtained from the responses to the question, "How much education do you think you will get?" Nearly 54 percent of the students surveyed expect to get at least a bachelors degree, a result that exceeds

Table B2.6

DISTRIBUTION OF EDUCATIONAL EXPECTATIONS OF 8TH AND 9TH GRADE STUDENTS

Level of Educational Expectations	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Bachelors degree or higher	574	53.7	275	55.4	299	52.1
Associate degree	85	7.9	47	9.5	38	6.6
Technical, vocational, business school	107	10.0	28	5.6	79	13.8
High school diploma	287	26.8	137	27.6	150	26.1
Less than high school	11	1.0	6	1.2	5	0.9
Not codable	6	.6	3	0.6	3	0.5
Total	1,070	100.0	496	100.0	574	100.0

even the optomistic figure of 38 percent implicit in their occupational aspirations. Another 8 percent anticipate obtaining an associate degree. While evidence from other surveys (_cf_., Parnes _et_. _al_., 1969) indicates that these expectations are likely to be scaled down as the students mature, a comparison with the actual behavior of 1976 graduates of the Philadelphia school system suggests that these expectations may not be far out of line. Among the 1974 graduates, 54 percent of those from comprehensive high schools and 35 percent of those from vocational-technical high schools (52 percent of all graduates) were enrolled in 2 or 4 year colleges in the semester immediately following high school graduation (School District of Philadelphia, 1977a). If high school graduates who have delayed entrance into institutions of higher education were also included, it is likely that the proportion of the 1976 graduates entering college would closely approximate of the proportion of eighth and ninth grade students who expect to do the same. The conclusion appears inescapable: many young Philadelphians aspire to professional positions, and enter college in pursuit of this goal, but they are destined to be disappointed by the job opportunities available in the Philadelphia SMSA.

Thirty percent of the students aspire to occupations in which the Philadelphia high schools offer specialized vocational education (See Table B2.7). There is some overlap between this group of students and the group of students that expects to go to college, since occupations in several of the vocational education clusters (particularly in communications, business data processing, and health services) require a two or four year college education. The proportion desiring jobs

Table B2.7

DISTRIBUTION OF OCCUPATIONAL ASPIRATIONS OF 8TH AND 9TH GRADE STUDENTS BY VOCATIONAL EDUCATION CLUSTER AND SEX

Vocational Education Cluster	Total		Male		Female	
	Number of Students	Percent of Total	Number of Students	Percent of Total	Number of Students	Percent of Total
(1) Power mechanics	25	2.3	25	5.0	0	0.0
(2) Manufacturing electro-mechanical	17	1.6	17	3.4	0	0.0
(3) Building construction and maintenance	44	4.1	41	8.3	3	0.5
(4) Communications	7	0.7	6	1.2	1	0.2
(5) Personal services	59	5.5	24	4.8	35	6.1
(6) Metal processing	8	0.8	8	1.6	0	0.0
(7) Business data processing	21	2.0	11	2.2	10	1.7
(8) Secretarial	74	6.9	1	0.2	73	12.7
(9) Distribution	12	1.1	5	1.0	7	1.2
(10) Clerical	22	2.1	6	1.2	16	2.8
(11) Health services	12	1.1	1	0.2	11	1.9
(12) Apparel trade	13	1.2	5	1.0	8	1.4
(13) Drafting	5	0.5	5	1.0	0	0.0
(14) Agriculture	3	0.3	3	0.6	0	0.0
All Clusters	322	30.1	158	31.9	164	28.6
Other	748	69.9	338	68.1	410	71.4
Total	1,070	100.0	496	100.0	574	100.0

included in the fourteen vocational education clusters, however, falls far short of the corresponding proportion of job openings. Table B2.2 shows that 68.4 percent of the job openings between 1974 and 1985 fall in this category. A comparison of Tables B2.7 and B2.2 shows that the personal services cluster accounts for 13.7 percent of the job openings but only 5.5 percent of the student aspirations; the secretarial cluster accounts for 13.3 percent of the job openings but only 6.9 percent of the student aspirations; the clerical cluster accounts for 14.4 percent of the job openings but only 2.1 percent of the student aspirations; while the health services cluster accounts for 9.4 percent of the job openings and only 1.1 percent of the student aspirations.

It is easy to understand the reluctance of students to enter these occupational fields, since openings in these fields have often been in low wage, low status jobs lacking opportunities for advancement. Not coincidentally, many of these jobs are in traditional areas of employment for women and are not very attractive to young men planning careers.

The schools cannot interpret fulfilling their manpower training function to mean that they should actively strive to reduce student aspirations or lessen the motivation of students to learn. Clearly the schools must reject the notion that it is their function to sort out the winners and losers and to channel some young people into dead end jobs. The schools cannot allow their primary purpose - the education of the youth of this society - to be corrupted by the failure of the job market to supply meaningful jobs in sufficient numbers.

This is especially true in light of the large percentage of students who plan to migrate out of the Philadelphia area after completing their educations. Nearly 32 percent of the students plan to leave the Philadelphia vicinity, and another 6.6 percent are undecided about staying (Table B2.8). The proportion of male students planning to leave (37.5 percent) is much higher than the proportion of female students (26.5 percent). While numerous social and cultural forces are at work here, one must include among these forces the possibility that the large number of job openings in typically female occupations is perceived by the young men as a lack of opportunity for them. Whatever the cause, nearly one-third of the eighth and ninth graders being educated in Philadelphia plan to seek employment elsewhere. A provincial view of the role of the Philadelphia schools is, therefore, inappropiate.

Nevertheless, the disjunction between the number of young people planning to go to college and the number of job opportunities for college-educated workers is grave cause for concern. National data indicate that it is a problem that cannot be resolved by migration. While the situation is less severe nationally than in the Philadelphia labor market, some planners estimate that the annual surplus of college graduates nationally will reach 700,000 by 1985 (O'Toole, 1977:53).

Table B2.8

Expected Area of Residence After Leaving High School

Location	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Stay in Philadelphia or surrounding suburbs	648	60.6	267	53.8	381	66.4
Leave Philadelphia area	338	31.6	186	37.5	152	26.5
Undecided	71	6.6	36	7.3	35	6.1
Uncodable	13	1.2	7	1.4	6	1.1
Total	1,070	100.0	496	100.0	574	100.0

The Role of the Public Schools

From 1945 to 1965, the demands of the American economy for educated workers grew at a rapid pace. Public schools responded with programs geared to forestall dropping out of high school and to prepare students for entry into colleges and universities. But by 1971 it was becoming clear that the number of educated workers was growing more rapidly than the number of jobs for them. Today, the Philadelphia School District, like public school systems across the nation, is confronted with a perverse dilemma. The public schools are succeeding in keeping youngsters in school longer and in increasing the number of students going on to college, while the growth in demand for educated workers slows down. As the data for Philadelphia confirm, an obvious disparity exists between the career plans of a considerable number of young people and society's requirements. It appears inevitable that this contradiction will be resolved, in the short-run at least, through the personal suffering of large numbers of young people who are unable to achieve their career objectives and are forced to abandon them.

Two views of this situation have emerged (*cf*., O'Toole, 1977: chapter 3). Some manpower economists have argued that the problem is that Americans are overeducated. One prominent economist even went as far as to suggest that the problem could be solved by cutting HEW expenditures for education (O'Toole, 1977: 57). Other economists, and we agree with them, have argued that the problem is one of underemployment. They have opposed cuts in expenditures for public education as a means of limiting the number of young people aspiring to college degrees and satisfying careers, contending instead that the long-run, global solution to the problem lies in a fundamental restructuring of the work-education relationship. While we agree with this view, it offers little insight into some difficult questions of immediate concern to public school administrators. Given the employment situation facing high school and college graduates over the next eight years, what is the responsibility of the public schools? What constitutes responsible behavior on the part of teachers, guidance counselors and administrators?

While we do not pretend to be able to address all the dimensions of this question, there are some things which, from our perspective as economists, seem clear.

* Students graduating from high school or college in 1985 will not retire until the 2030's. The government now estimates that a 20 year-old man will change jobs 6.6 times over his lifetime, and that at least one of these changes will require formal retraining (O'Toole, 1977: 39). While the employment outlook for college graduates between now and 1985 necessarily influences planning at the high school level, education must prepare students to take advantage of future opportunities that may open up. Education for informed and intelligent participation in society during the third millenium should not be sacrificed to the seemingly practical goal of preparing to meet current labor market conditions.

* Many entry level jobs do not require formal training. In more than 40 percent of the jobs in the Philadelphia area, the necessary skills can be learned on the job by a high school graduate. The skills many employers _actually_ look for are the ability to read, to write, to do arithmetic,

to learn new skills, and to interact cooperatively with coworkers and supervisors.

* Vocational education programs should teach not only vocational skills, but the theory behind vocational practice as well. Employers will then have a basis on which to build with further on-the-job training, workers skills will be more readily transferable from one kind of job to another, and skills will not become outdated as quickly. As with other high school programs, teaching students how to learn (including the necessary reading and study skills), so that they can take advantage of employer-sponsored retraining opportunities, should be a major priority.

Vocational programs must also be careful to acquaint students with jobs that exist, and to update courses so that students do not learn obsolete or unnecessary skills. The identification of emerging occupations in Part A of this report addresses this issue directly.

* The schools should recognize that the positive employment experience currently associated with vocational or technical training results from the fact that the number of skilled blue collar workers (supply) closely approximates the employment opportunities for them (demand). Thus the U.S. Department of Labor (1974:111) estimates the national increase in employment of skilled blue collar workers between 1970 and 1980 at 16.5 million and the increase in the number of skilled blue collar workers at 15.1 million. In Philadelphia, the proportion of jobs requiring technical, vocational, business school or apprenticeship training which includes most skilled blue collar jobs plus some personal services and secretarial jobs is 24.2 percent of the total, while the proportion of students surveyed

who aspire to such jobs is 23.6 percent. Surprisingly, only 10 percent of the students intend to complete their education by attending a technical, vocational or business school. Increasing the total number of students who desire such jobs is unlikely to reduce unemployment, since the supply of such workers nationally is already in line with employment opportunities, and locally the proportions appear about right. On the other hand, increasing the knowledge that students who aspire to jobs as skilled workers have regarding the educational requirements of the occupations they are considering may enable such students to better prepare for employment. Furthermore, accurate information about growing and declining industries may help vocationally-oriented students choose among skilled blue collar and service trades.

* Many jobs in the Philadelphia labor market that require a degree from a two or four year college are in occupations that fall within one of the fourteen vocational education clusters. In addition, many students who aspire to such occupations expect to get a college degree. Academic offerings at vocational-technical high schools should be upgraded, expanded and advertised, so that serious students can combine a first-rate college preparatory program with the acquisition of vocational skills. A similar approach has already proved successful at Saul (the agricultural high school) and the Franklin Learning Center (which houses the program for the creative and performing arts).

* Several studies have shown that actual work experience between the ages of fifteen and seventeen permits young people to examine jobs and careers and appears to be effective in easing the transition from

school to work. Cooperative education or work study programs give experience in responsible, interdependent activity, and are a major source of labor market information for the students involved.

Care must be taken, when expanding such programs, to guarantee that the students will not function as a source of cheap labor for employers, and the co-op jobs are not in declining industries. Co-op jobs should provide students with an opportunity to learn new skills or employ skills already learned in school. Otherwise, work will be unrewarding, and education will appear to be unnecessary. There is also some evidence that students benefit more from a series of short and varied experiences than from holding one job for an entire school year.

Our conclusion is that a narrow vocationalism, in which today's students are honed to meet the requirements of today's labor market, cannot be justified. Labor market conditions are likely to change over the working lives of those entering the labor force in the next few years. Employers require workers who can read, write, compute and have learned how to learn. These are also the prerequisites for personal development and for informed, responsible citizenship. In addition, actual work experience appears to be a major educational experience for teen-agers. Cooperative and work study programs should be expanded to encompass many more students.

Appropriate Uses for Data on Student Enrollment by Curriculum

The findings in this chapter impel us to recommend that the Philadelphia School District reject the view that the primary function of the public schools is to meet the demands of the labor market for appropriately trained manpower, to "provide workers in appropriate proportions to fill slots in the hierarchy of labor ... (to) sort out and select the correct ratio of professional to skilled to nonskilled workers for the labor market" (O'Toole, 1977: 144). With more than 40 percent of the job openings in Philadelphia and the surrounding counties requiring no more than a high school degree and job skills that can be learned quickly on the job, no other conclusion is tenable. Adopting target enrollment patterns by curriculum and aligning these enrollment patterns with the pattern of employment opportunities is neither desirable nor, given the aspirations of the students themselves, is it possible.

Since 1970 the Philadelphia School District has been moving, appropriately, in the direction of reducing the distinctions between academic and vocational-technical education. It has done this both by increasing the offerings of non-technical, academic subjects at vocational-technical schools, by increasing the opportunities for academic students in comprehensive high schools to receive vocational-technical training (*e.g.*, through attendance at the Randolph or Swenson skills centers), and by increasing the number and variety of career education programs available to all students. It has also dropped the formal distinctions between curricula. All students now receive the same diploma and, officially at least, there is no such thing as an academic, vocational-technical, commercial or general curriculum. All of these developments should be viewed favorably, as evidence that the School District of Philadelphia has largely resisted the pressures toward narrow vocationalism that always emerge in periods of widespread under- or unemployment.

While dropping the classification of students by curriculum makes sense as the distinctions between curricula become blurred, it must be recognized that there is a serious information loss to school administrators involved. It is no longer possible, for example, to observe changes in the academic preparation of college bound students by comparing the proportions of those in the academic program who have taken 3 or more years of mathematics beyond Algebra I. It is not possible to compare the earnings and employment experience of vocational-technical students in the comprehensive high schools with those of the graduates of vocational-technical high schools. It is not possible to determine whether participation in career development programs has reduced the number of students marking time in the general curriculum. Or whether, in fact, the opposite is true and the blurring of distinctions between curricula has resulted in an increase in the number of students who get some academic preparation (but not enough to enter a 4 year college) and some vocational or technical training (but not enough to qualify for a skilled job).

It is apparent that the planning functions of the School District require data on student enrollment patterns. Evaluation of new or existing programs is severely hampered by the lack of such information. The School District could reduce this information gap by conducting a periodic review of the courses taken by those who graduated from or dropped out of high school in the year prior to the review. *Post hoc* criteria could be established (in fact, such criteria continue to exist in the minds of students, counselors and teachers) for categories such as college preparatory, vocational-technical, college preparatory/ vocational-technical, and general. While some students would not fit neatly into any of the categories, this should prove relatively unimportant in the uses to which this information would be put. Indeed, the number of students who cannot easily be categorized would itself be valuable information. Periodic reviews, at four or five year intervals, would provide much needed data for comparisons of school system performance over time.

Summary

Data obtained on the aspirations of Philadelphia students and on the employment opportunities in Philadelphia and surrounding communities confirm an alarming trend that is already discernible nationwide.

The supply of educated workers is outgrowing the demand for such workers. Students' occupational aspirations and educational expectations are high, while employment opportunities, as one ascends the occupational hierarchy, are not expanding at the same pace. Nationally, the U.S. Department of Labor (1974, p. 111) estimates that between 1970 and 1980 the number of workers qualified for professional and technical occupations will increase by 45.3 million while the increase in employment in those occupations will only be 39.0 million. The oversupply of qualified workers in this decade will amount to 6.3 million persons. Locally, the disjunction between occupational aspirations and employment possibilities is revealed in the fact that 44 percent of the job openings require only a high school diploma and skills that are easily obtained on the job while only 15 percent require 4 or more years of college. Among the students surveyed, however, 38 percent aspire to jobs that require such a college degree while 54 percent expect to graduate from college. Only 24 percent aspire to jobs for which a high school education is considered adequate preparation.

This disparity between occupational aspirations and employment opportunities has made it impossible for the Philadelphia School District (and for all other public school systems) both to meet the educational needs of the students, including preparation for higher education and ultimately for a rewarding job, and to meet the manpower needs of the community. A wide gulf exist between the educational expectations of the students and the educational requirements of society, which the institution of public education is powerless to bridge. Responsible behavior on the part of school officials clearly does not include a narrow vocationalism that emphasizes meeting the community's manpower needs by limiting the access of large numbers of students to academic training and substituting instead vocational preparation for clerical, sales and semi-skilled jobs. Delineating what does constitute responsible behavior on the part of educators, however, is a very much more difficult task.

While global solutions that require restructuring of the education-work relationship have been proposed by serious thinkers, very little in the way of practical policy that can be implemented immediately by public school planners has been developed. We have tried to offer several suggestions relevant to planning for the Philadelphia School District from our perspective as economists. We will be able to make these recommendations more specific once the decision model has been specified.

PART B

Chapter 3: Educational Expectations of Eighth and Ninth Grade Students

Introduction

Numerous studies conducted over the past several years have shown that the so-called "Wisconsin model" provides a powerful explanation of the educational and occupational achievements of young adults (Sewell and Hauser, 1972; Haller and Portes, 1973; Porter, 1974; Portes and Wilson, 1976; and Kerckhoff and Campbell, 1977). The analysis of the factors affecting status attainment in the model proceeds in five stages. First, the socioeconomic characteristics of the family of origin (usually father's occupation, father's education and mother's education) together with mental ability(usually a standard IQ test) and demographic characteristics of the individual (e.g., sex, race, age and number of siblings) are used to explain performance in school. All of these factors, together with the influence exerted by "significant others" (e.g., parents, friends, teachers, counselors), then have an effect on the individual's level of ambition (that is, on his or her occupational aspirations and educational expectations). Finally, in the studies of attainment, all of these variables are used to explain educational and occupational achievement.

In the second year of this study, we will undertake a multivariate analysis of the factors affecting the occupational aspirations and educational plans of the students surveyed. The youthfulness of the students, and the fact that they are still a long way from actually pursuing careers, limits us to the first four stages of the analysis. Using a modified version of the Wisconsin model, we will at that time present a more complete analysis of the career preferences and educational plans of the 1070 eighth and ninth graders interviewed this year.

In this chapter we rely exclusively on tabular analysis in seeking to account for differences in the aspirations of youth and in their plans for further schooling. We examine these two variables in relationship to as many of the causal and related factors suggested by the Wisconsin model as the available data allow. Thus, in this chapter and the next we look at the effects of race, sex, grade in school, father's education, mother's education, father's occupation, and mother's occupation on the career preferences and educational goals of eighth and ninth grade students.

Educational Goals

The demographic factors--race, sex and grade in school--appear to have a major influence on how much education eighth and ninth graders plan to get. The students' expected educational attainment was ascertained from the answers to the question "How much education do you think you will get?" Table B3.1 displays the answers to this question broken down by race and grade. A striking difference in educational goals is evident in the comparison of eighth and ninth grade students. In the year between eighth and ninth grade, students become less optimistic or, perhaps, more realistic about their futures. Only 19.1 percent of the black eighth graders and 20.4 percent of the white eighth graders did not expect to pursue their education beyond high school, while 29.2 percent of the black and 41.1 percent of the white ninth graders planned to terminate their educations with high school graduation. At the other end of the educational spectrum, 66 percent of black eighth graders and 65.6 percent of white eighth graders plan to graduate from college or go on to graduate school. This contrasts sharply with the figures of 46.6 percent and 32.0 percent for black and white ninth graders, respectively. Thus, only half as many white ninth graders as eighth graders, and two-thirds as many black ninth graders as

Table B3.1

EXPECTED EDUCATIONAL ATTAINMENT BY RACE AND GRADE

	Eighth Grade						Ninth Grade					
	Black		White		Other		Black		White		Other	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	2	0.6	2	1.3	0	0.0	2	0.8	5	2.1	0	0.0
High school graduate	66	19.1	32	20.4	6	19.4	77	29.2	97	41.1	10	32.3
Vocational, technical or business school	24	7.0	11	7.0	5	16.1	33	12.5	32	13.6	2	6.5
Some college	25	7.2	9	5.7	1	3.2	29	11.0	17	7.2	4	12.9
College graduate	124	35.9	44	28.0	11	35.5	71	26.9	52	22.0	9	29.0
Graduate or professional school	104	30.1	59	37.6	8	25.8	52	19.7	33	14.0	6	19.4
Total	345	100.0	157	100.0	31	100.0	264	100.0	236	100.0	31	100.0

eighth graders, plan to graduate from college or graduate school.

Expected educational attainment by race and sex is shown in Table B3.2. We find that among young black students the educational goals of the women are somewhat higher than those of the men. Thus, 58.6 percent of the black women want to graduate from college or go to graduate school as compared with 56.3 percent of the black men. While this difference is small, it should be noted that 31 percent of the black women plan to attend a graduate or professional school while only 18.4 percent of the black men have such plans. At the same time, the proportion of black women who do not plan to go on beyond high school is 20.7 percent while the proportion of black men is 27.2 percent.

Among young white students, it is the expected educational attainment of the men that is higher. While 54.1 percent of the white men plan to graduate from college or graduate school, only 40.9 percent of the white women have such plans. Conversely, 36.7 percent of the white women plan to stop going to school after high school graduation as compared with 29.3 percent of the men.

An unexpected finding is that the educational goals of black students, male and female, are very similar to the goals of the white male students but are much higher than those of the female students.

In addition to asking the students about their educational plans, we also asked them how far they would like to go in school if money and/or grades were not a problem. Tables B3.3 and B3.4 present the answers to that question by sex, race and grade in school. It can be seen that eighth graders continue to be more optimistic about their futures than ninth, and that black students desire more education than white. However, the proportion of students in each grade, race and sex category who would like

Table B3.2

EXPECTED EDUCATIONAL ATTAINMENT BY RACE AND SEX

	Black				White				Other			
	Male		Female		Male		Female		Male		Female	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	0.4	3	0.9	5	2.4	2	1.1	0	0.0	0	0.0
High school graduate	71	27.2	72	20.7	60	29.3	69	36.7	7	25.9	9	25.7
Vocational, technical or business school	11	4.2	46	13.2	16	7.8	27	14.4	1	3.7	6	17.1
Some college	31	11.9	23	6.6	13	6.3	13	6.9	3	11.1	2	5.7
College graduate	99	37.9	96	27.6	55	26.8	41	21.8	9	33.3	11	31.4
Graduate or professional school	48	18.4	108	31.0	56	27.3	36	19.1	7	25.9	7	20.0
Total	261	100.0	348	100.0	205	100.0	188	100.0	27	100.0	35	100.0

Table B3.3

DESIRED EDUCATIONAL ATTAINMENT BY RACE AND GRADE

	Eighth Grade						Ninth Grade					
	Black		White		Other		Black		White		Other	
Desired Education	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	0.3	3	1.9	0	0.0	1	0.4	3	1.3	0	0.0
High school graduate	43	12.4	17	10.8	3	9.7	52	19.8	74	31.4	5	16.1
Vocational, technical or business school	21	6.1	12	7.6	8	25.8	35	13.3	30	12.7	2	6.5
Some college	28	8.1	10	6.4	1	3.2	20	7.6	18	7.6	2	6.5
College graduate	139	40.2	51	32.5	12	38.7	82	31.2	55	23.3	12	38.7
Graduate or professional school	114	32.9	64	40.8	7	22.6	73	27.8	56	23.7	10	32.3
Total	346	100.0	157	100.0	31	100.0	263	100.0	236	100.0	31	100.0

Table B3.4

DESIRED EDUCATIONAL ATTAINMENT BY RACE AND SEX

	Black				White				Other			
	Male		Female		Male		Female		Male		Female	
Desired Education	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	0.4	1	0.3	2	1.0	4	2.1	0	0.0	0	0.0
High school graduate	41	15.6	54	15.6	50	24.5	41	21.7	5	18.5	3	8.6
Vocational, technical or business school	12	4.6	44	12.7	12	5.9	30	15.9	5	18.5	5	14.3
Some college	30	11.5	18	5.2	9	4.4	19	10.1	2	7.4	1	2.9
College graduate	113	43.1	108	31.1	64	31.4	42	22.2	9	33.3	15	42.9
Graduate or professional school	65	24.8	122	35.2	67	32.8	53	28.0	6	22.2	11	31.4
Total	262	100.0	347	100.0	204	100.0	189	100.0	27	100.0	35	100.0

to graduate from college or go on to graduate school is higher than the proportion who expect to attain that much education.

The desired educational attainment of white ninth graders, like their educational plans, is markedly below the desired educational attainment of students in other race and grade categories. More than 31.4 percent of white ninth graders desire to go no further than high school. By comparison, only 12.4 percent of black eighth graders and 10.8 percent of white eighth graders desire to complete their educations with high school graduation. Even among black ninth graders this figure rises only to 19.8 percent, just two-thirds of the proportion of white ninth grade students. At the upper end of the scale, 47 percent of white ninth graders desire to graduate from college or continue beyond. This compares with 59 percent of the black ninth graders, 73.3 percent of the white eighth graders and 73.1 percent of the black eighth graders who desire that much education.

Looking at the distribution by sex, we find that the proportion of white women who would like to graduate from college or continue beyond falls below that of white men, black men or black women. The proportions are 50.2 percent for white women, 64.2 percent for white men, 67.9 percent for black men and 66.3 percent for black women. The proportion of white women who desire a high level of educational attainment is only three-fourths as large as the proportion in each of the other categories.

Socioeconomic Influences on Educational Goals

Like the demographic factors, socioeconomic variables also have an observable effect on educational goals. Tables B3.5 and B3.6 present the expected educational attainment of the students by mother's education and by father's education. The effects of each of these upon the students' educational goals are very similar. Forty-nine percent of the students

Table B3.5

EXPECTED EDUCATIONAL ATTAINMENT BY MOTHER'S EDUCATION

	Mother's Education									
	Not Finish High School		High School Graduate		Some College		College Graduate		Don't Know	
Student's Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	0.6	7	1.5	0	0.0	0	0.0	3	1.7
High school graduate	64	35.4	125	26.9	15	14.3	12	9.7	69	39.0
Vocational, technical or business school	25	13.8	51	11.0	7	6.7	6	4.8	17	9.6
Some college	16	8.8	38	8.2	6	5.7	5	4.0	18	10.2
College graduate	43	23.8	142	30.5	40	38.1	41	33.1	41	23.2
Graduate or professional school	32	17.7	102	21.9	37	35.2	60	48.4	29	16.4
Total	181	100.0	465	100.0	105	100.0	124	100.0	177	100.0

Table B3.6

EXPECTED EDUCATIONAL ATTAINMENT BY FATHER'S EDUCATION

	Father's Education									
	Not Finish High School		High School Graduate		Some College		College Graduate		Don't Know	
Student's Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	0.6	6	1.8	1	0.9	0	0.0	3	1.0
High school graduate	49	30.6	102	31.1	18	15.4	12	7.9	105	35.2
Vocational, technical or business school	18	11.2	35	10.7	15	12.8	4	2.6	34	11.4
Some college	22	13.7	29	8.8	3	2.6	4	2.6	25	8.4
College graduate	38	23.8	94	28.7	40	34.2	57	37.7	9	26.5
Graduate or professional school	32	20.0	62	18.9	40	34.2	74	49.0	52	17.4
Total	160	100.0	328	100.0	117	100.0	151	100.0	298	100.0

whose fathers are college graduates plan to go to graduate or professional school and 37.7 plan to graduate from college. For those whose mothers are college graduates the corresponding figures are 48.4 percent and 33.1 percent. Conversely, approximately 31 percent of those whose fathers either did not graduate from high school, or graduated but went no further, plan to end their own formal schooling with high school graduation. Twenty-eight percent of the students did not know how much education their fathers had and 17 percent did not know how much education their mothers had received. The distribution of educational goals for these groups of students closely resembles that of students whose parents did not finish high school. Though the educational aspirations of children whose parents have had a college education are markedly higher than the aspirations of children of less educated parents, a very high proportion of students in every category aspire to a college education. Thus 43.8 percent of those whose fathers did not graduate from high school, 47.6 percent of those whose fathers went no further than high school graduation and 43.9 of those who do not know how much education their fathers have had plan to graduate from college or continue beyond. If students who plan to get some college education are included, the proportion of students whose fathers were not highly educated but who plan to continue on to college rises well above 50 percent. A similar outcome can be observed for mother's education.

Table B3.7 presents the educational goals of the students by the status of the mother's occupation.* The mothers of about half the students are working, most of them (24.2 percent) in medium status occupations. Low status occupations account for 9.9 percent of the mothers and high status occupations for only 5.3 percent of the mothers. Another 9.3 percent of the mothers work, but their children do not know their occupations. The

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*Occupational status, here and throughout this study, is measured by the Duncan score of the occupation. The Duncan score assigns a prestige rating to an occupation based on the education and earnings of males in the occupation.

Table B3.7

EXPECTED EDUCATIONAL ATTAINMENT BY MOTHER'S OCCUPATION

	Mother's Occupation											
	Housewife		High Status Occupation		Medium Status Occupation		Low Status Occupation		Don't Know Occupation		Mother Deceased	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	7	1.4	0	0.0	0	0.0	0	0.0	3	3.2	1	3.1
High school graduate	159	32.5	5	9.3	37	15.0	34	33.7	33	35.1	8	25.0
Vocational, technical or business school	61	12.5	2	3.7	17	6.9	13	12.9	4	4.3	7	21.9
Some college	38	7.8	1	1.9	20	8.1	6	5.9	15	16.0	4	12.5
College graduate	128	26.2	22	40.7	90	36.6	30	29.7	20	21.3	4	12.5
Graduate or professional school	96	19.6	24	44.4	82	33.3	18	17.8	19	20.2	8	25.0
Total	489	100.0	54	100.0	246	100.0	101	100.0	94	100.0	32	100.0
Percent of students with mothers in each occupation	48.1		5.3		24.2		9.9		9.3		3.1	

the mothers work, but their children do not know their occupations. The mothers of about 3 percent of the students are deceased. The effect of mother's occupation on the expected educational attainment of the students is dramatic. About 85 percent of the students whose mothers hold high status jobs plan to graduate from college or go on to graduate school, and about 70 percent of the students whose mothers hold medium status jobs have such plans. This contrasts sharply with the figure of 37.5 percent for students whose mothers are deceased, 43.5 percent for students who don't know their mother's occupation, 47.5 percent for students whose mothers hold low status jobs, and 45.8 percent for students whose mothers are housewives.

The effects of father's occupational status upon the educational expectations of the students can be seen in Table B3.8. Nearly one-third of the students do not know their father's occupation. The fathers of another 7.8 percent of the students are deceased. Slightly more than one-fourth of the students have fathers who hold low status jobs. Though there are some differences in the educational plans of students in these three categories, it is the differences between the goals of these students and students with fathers in high or medium status occupations that are most striking. Among students whose fathers hold high status jobs, the proportion planning to graduate from college or continue beyond is 80.5 percent. This proportion drops to 66.5 percent for the children of fathers holding medium status jobs. It decreases by another 20 points, to 46.5 percent, for the children of fathers in low status occupations. For students who do not know their father's occupation the corresponding figure is 43.5 percent. A slightly higher proportion of students whose fathers have died (50 percent) plans to graduate from college or go on to graduate school.

Table B3.8

EXPECTED EDUCATIONAL ATTAINMENT BY FATHER'S OCCUPATION

	Father's Occupation									
	High Status Occupation		Medium Status Occupation		Low Status Occupation		Don't Know Occupation		Father Deceased	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	0	0.0	2	0.8	3	1.2	3	1.0	2	2.6
High school graduate	11	13.4	49	18.8	80	31.0	106	34.9	19	25.0
Vocational, technical or business school	3	3.7	26	10.0	29	11.2	31	10.2	10	13.2
Some college	2	2.4	10	3.8	26	10.1	32	10.5	7	9.2
College graduate	29	35.4	85	32.7	78	30.2	75	24.7	21	27.6
Graduate or professional school	37	45.1	88	33.8	42	16.3	57	18.8	17	22.4
Total	82	100.0	260	100.0	258	100.0	304	100.0	76	100.0
Percent of students with fathers in each occupation	8.4		26.5		26.3		31.0		7.8	

The reverse situation can be observed at the lower end of the educational spectrum. Only 13.4 percent of the children of high status fathers and 19.6 percent of the children of medium status fathers plan to go no further than high school graduation. This contrasts with the 32.2 percent of the children of low status fathers and the 35.9 percent of the children who do not know their father's occupation whose educational plans do not extend beyond high school graduation. A somewhat lower proportion of students whose fathers are deceased (27.6 percent) share this educational goal.

The socioeconomic status of a student's parental family, as measured by the education of the parents and by their occupational status, clearly exerts a major influence on the educational plans of eighth and ninth grade students. The children of fathers who hold high status jobs are almost twice as likely as the children of fathers in low status jobs to expect to graduate from college or graduate school. Mothers occupational status has a similar effect: the children of mothers with high status jobs are nearly twice as likely as the children of mothers with low status jobs or the children whose mothers do not work outside the home to graduate from college or go on to graduate school. Parents' education has a similar impact upon the student's expected educational attainment. Thus 43.8 percent of those whose fathers did not finish high school plan to obtain a college degree and 47.6 percent of those whose fathers graduated from high school have such plans. At the higher socioeconomic levels, 68.4 percent of those whose fathers received some college education plan to get a college degree as do 86.7 percent of those whose fathers are college graduates.

Occupational Aspirations and Educational Plans

The job that the students would like to have as adults (their occupational aspiration) and the job that the students expect to have as adults (their occupational expectation) are both likely to influence the students' educational plans. As can be seen in Tables B3.9 and B3.10, 146 students did not know what jobs they expected to have at age 35, but only 17 did not know what job they would like to have. While only 45 students would like to be housewives, 72 think that is probably what they will be doing.

Plans for attending a graduate or professional school are influenced by occupational plans. While 49.4 percent of students aspiring to high status jobs plan to continue their schooling thus far, only 15.9 percent of those aspiring to medium status occupations and 5.8 percent of those aspiring to low status jobs have such plans. At the same time, approximately half the students aspiring to low status jobs plan to go no further than high school graduation. A similar proportion of those who want to be housewives or who do not know what they would like to be also plan to end their formal schooling upon graduation from high school. By comparison, only one-fourth of those aspiring to medium status jobs and less than one-tenth of those desiring high status jobs plan to go no further.

Table B3.9

EXPECTED EDUCATIONAL ATTAINMENT BY OCCUPATIONAL ASPIRATION

	Occupational Aspiration									
	Housewife		High Status Occupation		Medium Status Occupation		Low Status Occupation		Don't Know Occupation	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	2.2	1	0.3	5	1.1	4	2.3	0	0.0
High school graduate	24	53.3	29	8.7	118	25.4	95	55.6	8	47.1
Vocational, technical or business school	8	17.8	11	3.3	74	15.9	14	8.2	0	0.0
Some college	1	2.2	14	4.2	46	9.9	19	11.1	3	17.6
College graduate	5	11.1	114	34.1	147	31.7	29	17.0	2	11.8
Graduate or professional school	6	13.3	165	49.4	74	15.9	10	5.8	4	23.5
Total	45	100.0	334	100.0	464	100.0	171	100.0	17	100.0
Percent of students aspiring to each occupation	4.4		32.4		45.0		16.6		1.6	

Table B3.10

EXPECTED EDUCATIONAL ATTAINMENT BY EXPECTED OCCUPATION

	Expected Occupation									
	Housewife		High Status Occupation		Medium Status Occupation		Low Status Occupation		Don't Know Occupation	
Expected Education	Number	%	Number	%	Number	%	Number	%	Number	%
Not finish high school	1	1.4	1	0.4	4	1.1	1	0.7	4	2.7
High school graduate	30	41.7	24	9.6	85	22.8	74	52.5	45	30.8
Vocational, technical or business school	9	12.5	6	2.4	57	15.3	14	9.9	14	9.6
Some college	7	9.7	13	5.2	35	9.4	9	6.4	13	8.9
College graduate	10	13.9	71	28.5	126	33.8	28	19.9	46	31.5
Graduate or professional school	15	20.8	134	53.8	66	17.7	15	10.6	24	16.4
Total	72	100.0	249	100.0	373	100.0	141	100.0	146	100.0
Percent of students expecting to obtain each occupation	7.3		25.4		38.0		14.4		14.9	

Summary

The impact of demographic characteristics, socioeconomic factors, and occupational aspirations upon the educational goals of eighth and ninth grade students can be clearly seen in the tabular analysis presented in this chapter. Among the demographic factors, grade in school has the most striking effect. Ninth graders are less optomistic, or perhaps more realistic, about their futures. Only half as many white ninth graders as eight graders plan to graduate from college. Among black students only two-thirds as many ninth graders as eighth graders have such plans. Race and sex also matter. Among young black students, the educational goals of the women are somewhat higher than those of the men. Among young white students, the situation is reversed and the expected educational attainment of the men is notably higher. There is a marked similarity between the educational goals of male and female black students and white male students. The goals of white female students are considerably below those of the other three groups.

Parents' education and parents' occupation have the expected effect upon the educational goals of the students. There is a direct relationship between the level of education of the parents and the plans of the students to graduate from college or go on to graduate school. A similar result holds for the status of the parents' occupations. Thus, students from families in which the parents have a higher level of education or a higher occupational status are more likely to set a goal of 16 or more years of formal school for themselves.

Finally, there is a strong association between the students own occupational aspirations and their expected educational attainment. Students aspiring to high status jobs were three times as likely to plan to go to graduate school as those aspiring to medium status jobs and eight times as likely as those aspiring to low status jobs.

The relative importance of each of these influences, however, cannot be investigated using tabular analysis, but must await the multivariate analysis to be conducted in the second year of this project.

PART B

Chapter 4: The Effects of Selected Variables on the Level of Occupational Aspirations and Occupational Expectations

In the following analyses we look at the determinants and coordinates of students' perceptions of their future in the labor market. The first series of issues is about occupational aspirations and is derived from the question, "What would you like to be doing when you are about 35 years old?" The responses to this question were coded in the three-digit census occupational codes and then converted to the Duncan occupation index. The Duncan index provides a measure of each occupation's prestige based on the income and the education of the job holders. Thus, for instance, when we write of students' "higher occupational aspirations" we are referring to high Duncan indexes for the occupations to which the students aspire.

The second question examined pertains to the students' occupational expectations. The question reads, "Sometimes it is not possible to get the job you would most like. Realistically, what job or kind of job do you think you will have when you are about 35 years old?" As with the occupational aspirations question, the responses were first coded into the three-digit census codes and then converted to the Duncan index.

With both questions (occupational aspirations and expectations) we have trichotomized the Duncan index into three equal portions: 0 - 33.3, 33.4 - 66.6, and 66.7 - 100.0. Also, we note that the two questions appear at opposite ends of the interview schedule. The aspiration question is the first of the sixty-one in the schedule, the expectation question is the fifty-third.

From Table B4.1 it is evident that the students' occupational aspirations cover the range of occupational prestige levels. While the responses

Table B4.1

FREQUENCY DISTRIBUTION OF DUNCAN INDEX OF OCCUPATIONAL ASPIRATIONS

	Code	Frequency	Percent
Lowest	1	171	16.5
Middle	2	467	45.0
Highest	3	337	32.5
Don't Know	-99	17	1.6
Housewife	-91	45	4.5
Total		1037	100.0

Table B4.2

FREQUENCY DISTRIBUTION OF DUNCAN INDEX OF OCCUPATIONAL EXPECTATIONS

	Code	Frequency	Percent
Lowest	1	142	14.2
Middle	2	377	38.2
Highest	3	249	25.2
Don't Know	-99	147	14.9
Housewife	-91	72	7.3
Total		987	100.0

are skewed optimistically toward a higher Duncan index profile than is found in the real work world, many students did select jobs in the lower occupational ranges. Further, the modal category is not the highest group, as one would find if the students listed only the occupational stars, such as doctor, lawyer, or corporate president.

Occupational expectations (see Table B4.2), compared with occupational aspirations, manifest a more realistic assessment of occupational realities. The proportion expecting occupations in the highest category is 25.2 percent, a significant drop from the 32.5 percent aspiring to such jobs. The percentage of those who "realistically" claim not to know what jobs they'll have jumps from 1.6 percent (the aspiration measure) to 14.9 percent (the expectation measure). The housewife category increases from 1.6 percent to 7.3 percent, implying that many of these young women do not aspire to become housewives but nevertheless expect to assume that role. The importance of the housewife role in affecting the students' future occupational distributions can be seen more clearly in Tables B4.3 and B4.4 (the relation between sex and occupational expectations and aspirations).

The major influence of sex on level of occupational aspiration (see Table B4.3) appears to be exerted in the lower ranges of the occupational spectrum. That is, while equal proportions of boys and girls desire higher status jobs, more boys than girls want lower status jobs. These data, however, may not indicate the triumph of occupational gynecocracy or even of sexual equality. As noted above, it is probable that many of the girls who would have selected lower status jobs have chosen "housewife" instead. Table B4.4 shows that 12.8 percent of the young women expect to be housewives, and exactly the same proportion of the young women do not know what job they will have. Interestingly, the percentage of young men who claim not to know

Table B4.3

RELATION BETWEEN SEX AND OCCUPATIONAL ASPIRATION

	Sex			
	Male		Female	
Occupational Aspirations	Number	Percent	Number	Percent
Don't Know	9	1.9	8	1.4
Housewife	1	0.2	44	7.9
Lowest	108	22.5	63	11.3
Middle	204	42.4	263	47.3
Highest	159	33.1	178	32.0
			N = 1037	

Table B4.4

RELATION BETWEEN SEX AND OCCUPATIONAL EXPECTATIONS

	Sex			
	Male		Female	
Occupational Expectations	Number	Percent	Number	Percent
Don't Know	77	17.4	70	12.8
Housewife	2	0.5	70	12.8
Lowest	87	19.7	55	10.1
Middle	161	36.4	216	39.6
Highest	115	26.0	134	24.6
			N = 987	

what jobs they will hold is slightly higher than the corresponding percentage of young women. It is possible that a part of the smaller proportion of "don't knows" among the girls is also due to their selecting "housewife" when they are not sure what jobs they will have.

The percentage of boys and girls expecting high status jobs are very similar, as are the percentages for both sexes' middle status occupational aspirations. Only the expectations of low status jobs differ substantially, with more men, as noted, expecting lower status work.

Tables B4.5 and B4.6 indicate the relations of grade with occupational aspirations and occupational expectations. The differences between the occupational aspirations of eighth and ninth graders is dramatic. It appears (see Table B4.5) that the one year serves to disillusion many of the students. Almost twice as many ninth graders as eighth graders aspire to the lower status jobs. Further, the decrease in certainty about their occupational futures can even be seen in the "don't know" category, which was selected by only 0.8 percent of the eighth graders but by 2.5 percent of the ninth graders.

Observations of the grade and occupational expectation table (B4.6) indicates that both grades have more limited expectations than aspirations, although the differential between grades persists. Only about 32 percent of the eighth graders and about 18 percent of the ninth graders expect higher status jobs, whereas the comparable figure for their aspirations are 41.4 and 23.5 percent, respectively. Their more realistic view of the future, however, does not extend to the point that more of them would expect low status jobs. Here the percentages are remarkably stable; only about a tenth of the eighth graders and a fifth of the ninth graders predict such humble achievement.

Table B4.5

RELATION BETWEEN GRADE AND OCCUPATIONAL ASPIRATIONS

Occupational Aspirations	Grade Eighth Number	 Percent	 Ninth Number	 Percent
Don't Know	4	0.8	13	2.5
Housewife	15	2.9	30	5.8
Lowest	60	11.5	111	21.6
Middle	227	43.5	240	46.6
Highest	216	41.4	121	23.5
			N = 1037	

Table B4.6

RELATION BETWEEN GRADE AND OCCUPATIONAL EXPECTATIONS

Occupational Expectations	Grade Eighth Number	 Percent	 Ninth Number	 Percent
Don't Know	67	13.5	80	16.3
Housewife	31	6.2	41	8.4
Lowest	56	11.3	86	17.6
Middle	183	36.8	194	39.6
Highest	160	32.2	89	18.2
			N = 987	

Table B4.7 shows the relation between occupational aspirations and ethnicity. It is obvious that blacks are more optimistic than whites about their job possibilities. About 36 percent of the blacks compared to about 28 percent of the whites aspire to the highest status jobs. Further 20 percent of the whites aspire to low status jobs whereas only 14.5 percent of the blacks expressed such limited aspirations. White girls, moreover, were more than twice as likely as black girls to want to be housewives.

There is little moderation of this racial differential in the delineation of occupational expectations (see Table B4.8) compared to that of occupational aspirations. About 20 percent of the whites and about 29 percent of the blacks expect to have jobs in the highest status category. This 9 percent spread is actually a few points wider than the difference between whites and blacks found with the aspiration measure. Similarly, the gap between whites' and blacks' expectations of becoming housewives is wider than the corresponding aspiration differential; 11.3 percent of the whites while only 4.4 percent of the blacks expect to be housewives. (It must be remembered that these percentages are based on the combined number of girls and boys of each race. To estimate the percentage of girls who want or expect to be housewives, double the percentages of the appropriate cell.)

Only slightly more whites than blacks do not claim to know what jobs they will have as adults. "Don't know" as their expected jobs was listed by 16.4 percent of the whites and 13.7 percent of the blacks. Given the differences between the races in the other categories this similarity is striking. As noted earlier, however, some of the whites who may have answered "don't know" have probably selected "housewife" instead.

In the previous chapter we examined the students' educational aspirations. We now look at those aspirations from a somewhat different perspective--the responses to a hypothetical question asking, "If you had good enough grades and enough money to keep going to school, how far would you like to go in school?" This question, thus, is a more idealized educational aspiration than the one examined previously. When cross-tabulated with the students' occupational desires it yields a useful display of the interaction between students' views of work and school.

Table B4.9 shows the relation between ideal educational aspirations and the students' occupational aspirations. There is an overwhelming monotonic relation between the two variables; those who want higher status jobs most often seek higher educational goals. Among those aspiring for jobs in the lowest occupational stratum the modal ideal educational aspiration chosen is "I would not finish high school." Correspondingly, most students desiring high status jobs would go to graduate school if they "had good enough grades and enough money."

The relation between ideal educational aspirations and occupational expectations (Table B4.10) is very similar to that of the variables just discussed. Those expecting lower status jobs tend to have lower educational ambitions; those with high occupational expectations hope to pursue college and graduate degrees.

The next four tables present the relations between parental background and the students' perceptions of their future labor market positions. Table B4.11 shows the influence of fathers' occupational positions on their children's occupational aspirations. We see that the father's job status is positively and strongly related to the occupational aspirations of his children. Almost 60 percent of the students with fathers in the highest level occupations aspire to higher status jobs. Similarly, about half (46.1 percent) of the students with fathers of middle status jobs aspire to middle status occupations.

Table B4.7

RELATION BETWEEN ETHNICITY AND OCCUPATIONAL ASPIRATIONS

Occupational Aspirations	Ethnicity					
	White		Black		Others	
	Number	Percent	Number	Percent	Number	Percent
Don't Know	4	1.0	10	1.7	3	5.1
Housewife	28	7.2	15	2.6	2	3.4
Lowest	78	20.0	85	14.5	8	13.6
Middle	169	43.3	266	45.2	32	54.2
Highest	111	28.5	212	36.1	14	23.7

N = 1037

Table B4.8

RELATION BETWEEN ETHNICITY AND OCCUPATIONAL EXPECTATIONS

Occupational Expectations	Ethnicity					
	White		Black		Others	
	Number	Percent	Number	Percent	Number	Percent
Don't Know	61	16.4	77	13.7	9	17.6
Housewife	42	11.3	25	4.4	5	9.8
Lowest	59	15.9	77	13.7	6	11.8
Middle	134	36.0	221	39.2	22	43.1
Highest	76	20.4	164	29.1	9	17.6

N = 987

Table B4.9

RELATION BETWEEN IDEAL EDUCATIONAL ASPIRATION AND OCCUPATIONAL ASPIRATIONS

	Ideal Educational Aspiration											
	Not Finish High School		Finish High School		Vocational School		College Awhile		Graduate College		Graduate School	
Occupational Aspirations	N	%	N	%	N	%	N	%	N	%	N	%
Don't Know	0	0	6	3.2	1	0.9	1	1.3	4	1.2	5	1.6
Housewife	2	25.0	21	11.3	5	4.7	4	5.1	6	1.8	7	2.2
Lowest	4	50.0	69	37.1	11	10.4	16	20.5	38	11.3	32	10.1
Middle	2	25.0	76	40.9	77	72.6	45	57.7	166	49.3	99	31.3
Highest	0	0	14	7.5	12	11.3	12	15.4	123	36.5	173	54.7

N = 1031

Table B4.10

RELATION BETWEEN IDEAL EDUCATIONAL ASPIRATION AND OCCUPATIONAL EXPECTATION

	Ideal Educational Aspiration											
	Not Finish High School		Finish High School		Vocational School		College Awhile		Graduate College		Graduate School	
Occupational Expectations	N	%	N	%	N	%	N	%	N	%	N	%
Don't Know	1	12.5	34	19.4	11	10.6	9	13.2	53	16.5	38	12.5
Housewife	1	12.5	20	11.4	6	5.8	6	8.8	16	5.0	23	7.5
Lowest	3	37.5	54	30.9	15	14.4	11	16.2	33	10.3	26	8.5
Middle	3	37.5	59	33.7	65	62.5	34	50.0	133	41.4	81	26.6
Highest	0	0	8	4.6	7	6.7	8	11.8	86	26.8	137	44.9

N = 981

Table B4.11

RELATION BETWEEN FATHER'S OCCUPATIONAL STATUS AND STUDENT'S OCCUPATIONAL ASPIRATIONS

	Father's Status									
Occupational Aspirations	Don't Know		Deceased		Lowest		Middle		Highest	
	N	%	N	%	N	%	N	%	N	%
Don't Know	7	2.4	1	1.4	1	0.4	4	1.6	0	0
Housewife	13	4.4	4	5.5	14	5.6	10	3.9	1	1.2
Lowest	52	17.7	9	12.3	65	25.9	24	9.3	6	7.3
Middle	130	51.2	37	50.7	103	41.0	119	46.1	26	31.7
Highest	71	24.2	22	30.1	68	27.1	101	39.1	49	59.8

N = 937

Table B4.12

RELATION BETWEEN FATHER'S OCCUPATIONAL STATUS AND STUDENT'S OCCUPATIONAL EXPECTATIONS

	Father's Status									
Occupational Aspirations	Don't Know		Deceased		Lowest		Middle		Highest	
	N	%	N	%	N	%	N	%	N	%
Don't Know	47	17.3	12	16.4	32	13.2	37	15.1	6	7.4
Housewife	18	6.6	10	13.7	16	6.6	16	6.5	5	6.2
Lowest	41	15.1	8	11.0	52	21.5	19	7.8	8	9.9
Middle	115	42.4	27	37.0	89	36.8	101	41.2	21	25.9
Highest	50	18.5	16	21.9	53	21.9	72	29.4	41	50.6

N = 912

The modal category for students with fathers in the lowest status occupations is, not unexpectedly, the lowest status one.

The relation between the father's occupational position and the student's status of expected job (see Table B4.12) is very similar to that of the father's work and the student's aspirations. In fact, if allowances are made for the greater uncertainty about expected jobs (i.e., the greater proportions of "don't knows"), the patterns are almost identical.

Tables B4.13 and B4.14 present the relations between mother's occupational status and student's occupational aspirations and occupational expectations, respectively.

The relation between the children's occupational choices and their mother's job level is similar to the relations between their occupational choices and their father's job (i.e., a positive relation between statuses) and do not require elaboration. Of particular interest, however, is the effect of having a housewife mother (as compared to a working mother) on the daughter's aspirations. It can be seen (Table B4.13) that of the approximately 43 girls who want to be housewives, 27 (over 60 percent) have mothers who are housewives. Similarly, Table B4.14 indicates that of the approximately 71 girls who expect to be housewives, 42 (almost 60 percent) have mothers who are housewives. Of course this does not imply the converse of these statements; that having a mother who is a housewife tends to produce daughters who wish to become housewives. As can be seen, this is not the case. It remains, however, that among girls who want or expect to be housewives, there is a strong tendency that their mothers are housewives.

Tables B4.15 through B4.18 display the associations between parental education and children's occupational aspirations and expectations. The pattern of findings are by now familiar. Looking at Table B4.15 (relation between

Table B4.13

RELATION BETWEEN MOTHER'S OCCUPATIONAL STATUS AND STUDENT'S OCCUPATIONAL ASPIRATIONS

Occupational Aspirations	Mother's Status											
	Don't Know		Housewife		Deceased		Lowest		Middle		Highest	
	N	%	N	%	N	%	N	%	N	%	N	%
Don't Know	1	1.1	8	1.7	0	0	1	1.0	2	0.8	3	5.8
Housewife	3	3.3	27	5.6	3	9.7	4	4.1	5	2.1	1	1.9
Lowest	23	27.5	94	19.6	4	12.9	19	19.4	19	7.9	1	1.9
Middle	42	46.2	218	45.5	15	48.4	43	43.9	119	49.2	16	30.8
Highest	20	22.0	132	27.6	9	29.0	31	31.6	97	40.1	31	59.6

N = 993

Table B4.14

RELATION BETWEEN MOTHER'S OCCUPATIONAL STATUS AND STUDENT'S OCCUPATIONAL EXPECTATIONS

Occupational Aspirations	Mother's Status											
	Don't Know		Housewife		Deceased		Lowest		Middle		Highest	
	N	%	N	%	N	%	N	%	N	%	N	%
Don't Know	21	25.6	61	13.3	3	10.7	10	10.6	35	14.9	8	16.0
Housewife	3	6.1	42	9.2	3	10.7	7	7.4	11	4.7	3	6.0
Lowest	9	11.0	82	17.9	3	10.7	19	20.2	16	6.8	4	8.0
Middle	34	41.5	166	36.2	12	42.9	38	40.4	103	43.8	11	22.0
Highest	13	15.9	107	23.4	7	25.0	20	21.3	70	29.8	24	48.0

N = 947

father's education and student's occupational aspirations) and Table B4.16 (relation between father's education and student's occupational expectations) we note one departure from the expected positive relationship. There is little association between father's occupational background and children's selection of middle status jobs. This phenomenon is due to two factors: (1) the effects of a father's education on his children is in part moderated through his job, i.e., it's not only the father's education that influences his children, it is also how the father has "translated" his educational achievements into an occupational position; and (2) the preponderance of jobs are within the middle of the Duncan index. It is clear, however, that those students with less educated fathers tend to aspire to and expect the lower status jobs; and those students with more educated fathers most often anticipate holding jobs in the highest status category.

The influence of mother's education on her children's occupational desires and expectations is very similar to the influence of the father's education. This is probably due in part to a collinearity caused by selective mating as well as the direct effect of the mother's education on her children. Thus, there is a positive and very strong association between mother's education and the children's occupational aspirations (see Table B4.17) and occupational expectations (see Table B4.18). In future research we shall examine more closely the independent effect of each parent's education on the students' aspirations. This will require a multivariate analysis and perhaps a separate study of single-parent families.

Summary

The occupational aspirations and occupational expectations of the students vary systematically with sex, ethnicity, grade and parental background. Further, there is a strong interaction between the ideal educational aspirations and

Table B4.15

RELATION BETWEEN FATHER'S EDUCATION AND STUDENT'S OCCUPATIONAL ASPIRATION

	Father's Education									
	No High School Diploma		High School Diploma		Some College		College Degree		Don't Know	
Occupational Aspiration	N	%	N	%	N	%	N	%	N	%
Don't Know	2	1.3	6	1.8	2	1.7	2	1.4	5	1.8
Housewife	8	5.1	10	3.1	3	2.6	4	2.7	20	7.0
Lowest	34	21.8	57	17.5	13	11.3	9	6.1	56	19.7
Middle	73	46.8	146	44.8	49	42.6	60	40.8	134	47.2
Highest	39	25.0	107	32.8	48	41.7	72	49.0	69	24.3

N = 1028

Table B4.16

RELATION BETWEEN FATHER'S EDUCATION AND STUDENT'S OCCUPATIONAL EXPECTATION

	Father's Education									
	No High School Diploma		High School Diploma		Some College		College Degree		Don't Know	
Occupational Expectation	N	%	N	%	N	%	N	%	N	%
Don't Know	19	12.6	43	13.9	10	9.2	18	12.8	56	20.7
Housewife	12	7.9	13	4.2	12	11.0	7	5.0	28	10.3
Lowest	29	19.2	52	16.8	10	9.2	15	10.6	35	12.9
Middle	63	41.7	129	41.7	41	37.6	41	29.1	100	36.9
Highest	28	18.5	72	23.3	36	33.0	60	42.6	52	19.2

N = 981

Table B4.17

RELATION BETWEEN MOTHER'S EDUCATION AND STUDENT'S OCCUPATIONAL ASPIRATION

Occupational Aspiration	Mother's Education: No High School Diploma		High School Diploma		Some College		College Degree		Don't Know	
	N	%	N	%	N	%	N	%	N	%
Don't Know	2	1.1	4	0.9	3	2.9	2	1.7	5	3.0
Housewife	10	5.5	15	3.3	3	2.9	4	3.4	13	7.9
Lowest	37	20.4	83	18.1	12	11.8	6	5.0	31	18.8
Middle	97	53.6	198	43.1	43	42.2	43	36.1	82	49.7
Highest	35	19.3	159	34.6	41	40.2	64	53.8	34	20.6

N = 1026

Table B4.18

RELATION BETWEEN MOTHER'S EDUCATION AND STUDENT'S OCCUPATIONAL EXPECTATION

Occupational Expectation	Mother's Education: No High School Diploma		High School Diploma		Some College		College Degree		Don't Know	
	N	%	N	%	N	%	N	%	N	%
Don't Know	23	13.1	57	13.2	12	12.4	16	13.8	39	24.4
Housewife	19	10.9	24	5.6	5	5.2	6	5.2	18	11.2
Lowest	28	16.0	78	18.1	10	10.3	12	10.3	12	7.5
Middle	81	46.3	164	38.0	33	34.0	33	28.4	63	39.4
Highest	24	13.7	109	25.2	37	38.1	49	42.2	28	17.5

N = 980

the students' perceptions of their future labor market positions. Any attempt to influence the students' occupational decisions must consider these relationships.

The association between parental background and students' work aspirations manifests the continuing power of occupational inheritance. One of the best predictors of a student's seeking a higher status job is his/her parent(s) having a higher status job. Clearly if meritocracy is to be the major determinant of labor market position we should see a greater equality of aspirations. Similarly, the greater optimism about work found among black students compared to white, and girls compared to boys, speaks to the need for a coordinated career education program. The occupational predictions of these students are not reflected in the reality of the labor market. And while every effort must be made to encourage those students who have traditionally had the least labor market success, these efforts must be based on their concrete understanding of the requirements of the labor market. Many of the students appear to be only poorly aware of the educational and other credential prerequisites of higher status jobs. The students must be informed in such a manner that they are led to succeed, rather than give up their hopes of finding rewarding work.

Ultimately, however, the kindest presentation of career information is to show the bleak prospects for those jobs that are declining in demand. A fairy tale version of the labor market will only increase the frustration once the students encounter its realities.

PART B

Chapter 5: Summary of Part B

The preliminary analysis of the Student Needs Survey of eighth and ninth graders has focused on their occupational and educational plans. In Chapter 2, the educational requirements implicit in the occupational structure of the Philadelphia labor market are compared with the educational requirements of the jobs to which the students aspire. The results of this comparison are discouraging, presenting the Philadelphia school system with a dilemma. Our analysis indicates that 50 percent of the job openings in the Philadelphia labor market between now and 1985 require no more than a high school diploma. But only 25 percent of the students aspire to jobs that require this low level of formal schooling. On the other hand, 15 percent of the job openings will require a bachelor's degree or higher while 38 percent of the students aspire to occupations requiring that amount of education and 54 percent expect to attain that much schooling. Moreover, half the job openings will be in personal services, health services, secretarial and clerical occupations, while only 15 percent of the students aspire to such positions. The aspirations of the students far exceed the opportunities available to them in the local labor market, at least in the period immediately following graduation from school. As a result, the school system's goal of meeting the needs of the students would appear to conflict with its function of preparing young people to meet the manpower needs of the community. The disparity between student goals and labor market requirements raises serious questions for the schools. We have argued that the schools cannot interpret fulfilling their manpower training function to mean that they should actively strive to reduce student aspirations or lessen the motivation of of students to learn. Students graduating from high school or college in 1985 will not retire until the 2030s. Education for informed and intelligent participation in society during the third millenium should not be sacrificed to the seemingly practical goal of preparing students to meet current labor market conditions.

Grouping employment opportunities and student aspirations into vocational education clusters (as defined by the school district) yields some important results. About 24 percent of the job openings between 1974 and 1985 will be in occupations that require technical, vocational, business school or apprenticeship training, while 21 percent of the students aspire to such occupations. However, only 14 percent of the students expect to pursue this type of post-high school education. Most of these job openings are in fields in which the Philadelphia school system offers relevant vocational education programs. Career education programs designed to inform students of the educational preparation best suited to their career goals would be likely to result in an increased demand by students for vocational/technical education.

Perhaps more surprising is our finding that 68 percent of the job openings will be in occupations that fall within one of the fourteen vocational education clusters. This proportion far exceeds the proportion of job openings that require technical, vocational, business school or apprenticeship training. This is true because some of the occupations falling in these clusters require a college degree, while others do not require advanced vocational training following high school graduation. It would appear that vocational education programs, when combined with a solid academic foundation in language, computation and study skills, have the potential to prepare students for entry into a broad spectrum of post-high school education and employment experiences.

From the point of view of labor market requirements, it is apparent that an expansion of the number of students receiving a vocational-technical education while in high school would be beneficial. However, as already noted, student aspirations do not correspond to labor market requirements. While nearly two-thirds of the job openings are in fields in which the school system provides vocational education, less than one-third of the students aspire to occupations falling into these categories; the expressed preference of many students is for a college preparatory program. This suggests that any expansion in vocational education would have to be in joint academic/vocational programs if both student needs and manpower requirements are to be met.

Chapters 3 and 4 examine the demographic and socioeconomic correlates of the students' educational goals and occupational aspirations. The demographic factors--race, sex and grade--appear to influence students' educational expectations. Educational goals of ninth graders are much lower than those of eighth graders. Only half as many white ninth graders as eighth graders plan to graduate from college while among black students two-thirds as many ninth graders as eighth graders have such plans. The educational expectations of black women are somewhat higher than those of black men. Among the white students, the situation is reversed and the expected educational attainment of the men is notably higher. The educational goals of male and female black students and white male students are quite similar, while the goals of white female students fall considerably below those of the other three groups.

Parents' education and parents' occupation have the expected effect upon the educational goals of the students. Forty-four percent of the students whose fathers did not finish high school plan to graduate from college, 48 percent of those whose fathers are high school graduates plan to graduate from college, 68 percent of those whose fathers had some college education plan to graduate from college and 87 percent of those whose fathers are college graduates have such plans. A similar effect can be observed for mother's education. Students from families in which the parents have a higher level of education are more likely to set a goal of 16 or more years of formal schooling for themselves. It should be observed, however, that nearly half the children of poorly educated parents intend to graduate from college. Parents' occupational status also affects educational expectations. Thus 46 percent of the children of low status fathers plan to graduate from college, as compared with 66 percent of the children of middle status fathers and 80 percent of the children of high status fathers who have such plans. Finally, there is a strong association between the students' own occupational aspirations and their expected educational attainment. Students aspiring to high status jobs were three times as likely to plan to go to graduate school as those aspiring to medium status jobs and eight times as likely as those aspiring to low status jobs.

The occupational aspirations and occupational expectations of the students, like their educational goals, vary systematically with race, sex, grade, parents' education and parents' occupation. The students' occupational expectations manifest a more realistic assessment of occupational realities than their occupational aspirations. The proportion expecting high status jobs is 25 percent while the proportion aspiring to such positions is 32 percent. While only 2 percent of the students did not know what kind of work they would like to do, 15 percent reported that they did not know what kind of work they really expected to be doing.

Race, sex and grade all affect the occupational aspirations of the students. Black students tend to have higher aspirations than white students, female students tend to have higher aspirations than male students, and eighth graders have dramatically higher aspirations than ninth graders.

Parental background has a strong influence on students' perceptions of their future labor market positions. Father's job status is positively related to the occupational aspirations of his children. Almost 60 percent of the students with fathers in the highest level occupations aspire to higher status jobs. Similarly, almost half the students with fathers in middle status jobs aspire to middle status occupations. Not surprisingly, the modal category for students with fathers in the lowest status occupations is the lowest status one. This association between parental background and students' aspirations manifests the continuing power of occupational inheritance.

The tabular analysis of Chapters 3 and 4 attests to the powerful influence of demographic and socioeconomic factors upon the educational and occupational ambitions of young people. The relative importance of each of these influences, as well as the effects of intervention by guidance counselors and other school personnel, cannot be determined, however, until the second year of this project when a multivariate analysis of the data will be conducted.

Future Research

We have only looked at a few of the questions from the survey's interview Schedule (see Appendix D). And with those, we have only used tabular analyses in our investigation. Clearly, then, our future efforts will be directed at studying the many other issues encompassed in the survey instrument, and at conducting multivariate analyses of both the questions already examined and those yet to be examined. This, of course, is in addition to administering an interview schedule to the tenth and eleventh grade samples.

In a separate appendix to this report, the data from the entire survey are presented in the following forms: (1) sex cross-tabulated by each variable; (2) grade cross-tabulated by each variable; (3) sex cross-tabulated by each variable, controlling for ethnicity; and (4) ethnicity cross-tabulated by each variable, controlling for grade. These tables illustrate the wealth of information available from this study. We wish, here, only to indicate some of the issues to be investigated in the next year of the project.

Questions four through seven pertain to the girls' work plans in relation to child-rearing responsibilities. We shall look at the influences of the girls' families on these plans. Specifically, we shall compare those girls from homes where the mother works to those where mothers do not work. And within those homes where the mother works, we shall compare the influences of mothers who have higher status jobs with mothers of lesser occupational position. This comparison, also, can be made after controlling for overall family social status.

Questions eight through twenty deal with the importance of several work-related values--such as respect, salary, security, schedules, autonomy, work setting, and intrinsic reward on the occupational choices of the students. We shall be interested in factors affecting these values as well as in determining how, and to what extent, these values affect the students' actions. Similarly, questions fifty-four through sixty-one pertain to beliefs about the Protestant ethic and the ability of an individual to control his/her world. We shall investigate these issues in the same fashion we outlined above. Moreover, we shall relate these basic beliefs to the individual work values.

Several questions deal with the student's decision process regarding occupational selection. These attempt to ascertain how the students found out about the jobs they are considering and what previous experiences they have had with them. Further, these questions explore the students' educational plans as they provide, or fail to provide, the training for their wanted jobs. We shall explore the process of occupational selection and preparation in relation to demographic factors, the type of occupation desired, and the values of the students.

A section of the interview schedule is devoted to the influence of the guidance counselor. We shall be interested in the differential effects of counseling as mediated through students' demographic factors, through the particular educational setting, and through the students' occupational expectations and beliefs.

There are many more areas of inquiry and we have only sketched some of the intended research As noted, the more elaborate statistical and methodological techniques to be employed provide greater specificity of effect and the opportunity to consider many more variables at one time. We look forward to further investigations with these data and with the data generated from the surveys of the tenth and eleventh grade samples.

PART C

PRELIMINARY DECISION MODEL

PART C

Chapter 1. A Vocational-Education Decision Model: An Overview

While it is readily recognized that labor market projections and student needs evaluations play some role in the planning process, exactly how these inputs should be integrated into a planning or decision model is not a straightforward task. Indeed, the specification of the complete model with the integration of the labor market results and student surveys constitute the major thrust of the second year's effort. In this chapter we review the basic structure of a decision model and indicate its role in educational management.

A decision model is but a set of rules which link variables which can be controlled by the decision maker (staff, plant and facilities) to variables which are not easily controlled (budget allocations, students, preferences, job availability). If the model is well-formulated the decision maker will be able to choose an "optimal" strategy from among many possible solutions, as well as continually update this strategy.

The theory of optimal decision analysis posits the following structure. First, the decision maker is assumed to have a preference function. A preference function orders the acceptability of various outcomes. In its mathematical form the preference function is a function of both controlled and noncontrolled variables. This is illustrated in the next chapter. Next, we posit a set of linear relationships connecting the two classes of variables. These become the constraints in the analysis. The decision maker then maximizes the preference function subject to the constraints by means of the Lagrangian technique. The results of this maximization are a set of optimum values or decisions.

By formalizing the decision process, the viability of alternative strategies can be assessed vis a vis some quantified statement of an overall objective. In the situation where no overall objective is forthcoming, the tradeoffs among subobjectives can be investigated for costs, effectiveness, compatibility, and division of subsequent inputs. In effect, the model would permit the creation and testing of various planning scenarios.

What makes the process attractive is that it permits forecasts of noncontrolled variables to enter the analysis. If the forecasts deviate substantially from what actually occurs this error can be used to "update" the decision model.

The specification of various preference functions will require consultation with school board officials. Included as possible objectives for such an analysis could be student/teacher ratios, space/student ratios, dollar per student, program growth and job placement, to name a few.

For illustrative purposes let us propose the following hypothetical application of a decision model. Consider an objective which maximizes the employment possibility of high school graduates who do not go on to college. The principal sources of uncertainty about this problem are: (1) availability of jobs for people with a high school degree, both with and without Voc-Ed training; (2) the students' imperfect perception of available jobs and their knowledge of the educational requirement for obtaining such jobs; and (3) the labor force participation rates for high school graduates. Variables which are under the control of the decision maker include: (1) size of Voc-Ed program; (2) budget allocations; (3) number of guidance counselors; and (4) student-teacher ratios.

Some possible linkages include: (1) correcting faulty knowledge of the world of work by increasing guidance counseling programs; (2) upgrading training programs by budget allocations to provide training in sectors where employment possibilities are most promising; and (3) in periods of low employment possibilities for high school graduates, decreasing student-teacher ratios to increase ultimate years of schooling and thus to decrease the labor force participation rates for high school graduates. While this list is, of course, not inclusive, it does illustrate the basic tradeoffs which are involved. The selection of a course of action depends on the following: (1) probability of success; (2) inertia within the system; (3) budget constraints; (4) personal policy; and (5) communication channels.

A decision model output would consist of a ranking of possible strategies to achieve the stated objective. The ranking can also be viewed as a statement of feasibility of such strategies.

It would be obvious that occupational forecasts will play a major role in formalizing the direction and intensity of a program designed with a view of more than a few years. The number of new and emerging occupations will have serious implications for the viability of key elements of vocational education curricula. Thus, a decision model which places great weight on the successful placement of its graduates in "meaningful, rewarding jobs" will necessarily be forced to innovate and to anticipate changes in occupational requirements.

There is a large and valuable literature dealing with the problem of planning under uncertainty. Linear decision rules provide a useful context for searching out maximum risk responses to uncertainties in demand and growth. Such "rules" make efficient use of all current (and past) information and expectations of future inferences regarding probable states. Future inferences require forecasts. In general, it is necessary to forecast those variables that are beyond control.

Let y be an uncontrolled variable. Let H(x/y, L) be a rule which translates the forecast of y, along with additional information, L, into a response in a controlled variable x. If the rule is dynamic, the decision maker should be concerned with the path implied by the rule. Let $L_i(i=0,1\ldots,T)$ be the information available at point $i=1$. Let the set of decisions for the period $i=1,\ldots,T$ be denoted $\bar{x}_i$, where the information L is known. For future decisions, based on the current set of information, denote the decision as $E_{i-1}\bar{x}_i$, that is, the conditional decision $\bar{x}_i$ given the information for the period $i-1$. Let the uncontrolled values in period $i=1,\ldots,T$ be denoted $E_{i-1}y_i$, the conditional forecast of y_i based on information available at period $i-1$.

Figure 1 describes the updating process. Notice that a set of decisions can be constructed at each period L. Decisions of $E_0\bar{x}_i$ are revised each period to include new information. In this way long-term forecast errors are minimized. The figure illustrates the functional role that forecasting plays in the planning context.

While not delving into the functional representation of such a rule(s), we have noted that they require forecasts of certain key variables, e.g., job openings. The updating procedure enables one to link revised forecasts, short-run forecasts, to a planning horizon which is essentially long-term.

FIGURE 1

UPDATING PROCESS FOR A LINEAR DECISION RULE

Beginning of period	available information	Decisions in period 1,...,T				Non Controlled values in period 1,...,T			
1	L_0	$\bar{x}_1$	$E_0\bar{x}_2$	....	$E_0\bar{x}_T$	E_0y_1	E_0y_2	.....	E_0y_T
2	L_1	$\bar{x}_1$	$\bar{x}_2$	....	$E_1\bar{x}_T$	E_1y_1	E_1y_2	.....	E_1y_T
⋮	⋮	⋮	⋮		⋮	⋮	⋮		⋮
T-1	L_{T-2}	$\bar{x}_1$	$\bar{x}_2$	....	$E_{T-2}\bar{x}_T$	$E_{T-2}y_1$		.....	$E_{T-2}y_T$
T	L_{T-1}	$\bar{x}_1$	$\bar{x}_2$	....	$\bar{x}_T$	$E_{T-1}y_1$	.	.....	$E_{T-1}y_T$

PART C

Chapter 2. Specification of a Prototype Decision Model[*]

1. Overview

We assume that the vocational education system has multiple goals, not all of which can be fully attained, partly because of resource limitations, but possibly partly also because of direct incompatibility of some goals. Let y_i^* be the ith goal, expressed in numerical terms. Let y_i be the actual attainment of the system expressed in numerical terms of the same dimensionality as y_i^*: In general, $y_i \neq y_i^*$. The system may have to "trade off" worse attainments of some of the goals in order to get better attainments of others. We express the rate of exchange acceptable to the system by writing a quadratic loss function,

$$W = \sum_{i=1}^{n} \alpha_i (y_i - y_i^*)^2 \tag{1}$$

where the α_i are constants which express the relative importance of the different goals. Thus, the α_i should be chosen by the responsible authority subject to

$$\sum_{i=1}^{n} \alpha_i = 1 \tag{2}$$

so as to reflect their own value judgment as the relative importance of the goals.

We then minimize (1) subject to the constraints

$$y_i = \sum_{j=1}^{m} r_{ij} \, x_j + S_i + E_i \tag{3}$$

which express the resource limits and incompatibility in principle of the goals. The r_{ij} and S_i are regarded as known constants and the E_i as random variates. The x_j are the instrument variables, that is, the policies of the system expressed in quantitative terms. (The y_i are called "uncontrolled variables" by which is meant that they are not directly controlled, but are indirectly, and perhaps only approximately controlled by manipulating the x_j.)

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[*] We wish to acknowledge the helpful suggestions on this topic made by Roger McCain.

An example of a constraint of incompatibility in principle would be the conflict between the goals of larger enrollment and smaller class size with a given faculty. We might write

$$y_1 = r_1 x_1 \tag{4}$$

where y_1 is enrollment, x_1 class size, and r_1 the number of teachers times the number of classes per teacher. There is no random term since this is an arithmetic relationship and is perfectly known. An example of a constraint of limited resources would be the budget of the system, determined by a higher authority. Suppose, for example, that enrollment is estimated to depend on counselling with some random variation:

$$y_1 = r_2 x_2 + E_2 \tag{5}$$

where X_2 is counselling expenditure. Suppose also that the budget and the money cost of faculty are given so that

$$m y_1 + x_2 = S_2 \tag{6}$$

where m is direct money cost of faculty per enrollee and S_2 is the budget. We could then substitute in (5) and obtain

$$(1 + r_2 m_1)\, Y_1 = r_2 S_2 + E \tag{7}$$

a budgeting constraint on enrollment.

This approach can be generalized in several ways. The major advantages are as follows: (a) It embodies diminishing returns. That is, the more nearly a goal is attained, the less urgent it is to improve performance in that area. (b) It is consistent with the usual econometric method for the estimation of imperfectly known constraints. (c) It minimizes the difficulty arising from imperfect knowledge of constraints. The disadvantages lie in the limitation on the mathematical form of the loss function (1) and the constraints (3). In particular, the requirement that constraints be linear can limit the applicability of the method. Returning to equation (4), suppose that the faculty is not given, but is an instrument variable. The (4) becomes

$$y_1 = r_1 x_1 x_2 \tag{8}$$

where r_1 is the number of classes per faculty member, x_1 the class size, and x_2 the number of faculty; y_1 is enrollment as before. This constraint is not linear, but multiplicative; the method is not directly applicable in the presence of a constraint like (8). It would be possible, however, to regard (8) as

$$\text{In } y_1 = \ln r_1 + \ln x_1 + \ln x_2 \tag{9}$$

and make (1) a function of the logarithms of the y_1 rather than the y_i themselves. Then if all constraints are multiplicative, there may be no difficulty.

2. The Problem of Mixed Constraints

Unfortunately, this conclusion does not apply to the problem at hand.

Let y_i be enrollment in classes feeding into job cluster i, $i=1,\ldots,n$. Let x_i be faculty allocated to job cluster i, x_{i+n} nonfaculty expenditure on job cluster i, and w the personnel cost to the system per faculty member, which is given. We then have constraints

$$y_i = r_i x_i x_{i+n}, \qquad i=1,\ldots,n \tag{10}$$

$$\sum_{i=1}^{n} w x_i + \sum_{i=1}^{n} x_{i+n} = S \tag{11}$$

where S is the given budget. If the x_i are untransformed, then constraints

(10) are nonlinear. If the x_i are transformed into logarithms, then constraint (11) is nonlinear or undefined. In either case, the quadratic-loss-function approach is inapplicable.

There might be any number of heuristic procedures for getting around this problem. Two will be suggested here.

3. Single-iteration Procedure

We may simply assume the nonlinearity problem away, by (in this instance) taking class size as a given constant rather than as an instrument variable. Constraint (1) then becomes a linear (and homogeneous) relationship between enrollment in a sector and faculty allocated to that sector.

This may be a plausible approach, especially in the short run, especially in regard to job clusters which rely on laboratory-type classes. In such classes it is especially likely that enrollment will be constrained by the physical facilities. Of course, this constraint may vary from school to school so that average class sizes might fall as faculty increases, bringing marginal facilities into use. It would then be necessary to estimate the linear approximation to (10).

$$y_i = r_i x_i + s_i \tag{12}$$

In any case, r_i would no longer be given a priori and it would have to be estimated.

The quadratic loss function would then be minimized subject to the linear, estimated constraints.

4. Multi-iteration Procedure

It may be workable to proceed as follows:

1. Taking the x_i as given, maximize subject to (10) which is now linear,

and (11), thus determining the allocation of faculty, x_i^*, for the given x_{i+n}.

2. Taking $x_i = x_i^*$ as given, optimize x_i sector by sector. This assumes that the x_{i+n} are unconstrained by classroom capacity, since the quadratic loss function approach does not admit inequality constraints. Here again, the linear constraints on optimization are equations (10).

3. Reiterate as appropriate.

It is not asserted that this procedure will converge, nor, if it will converge in principle, that it will converge in a usefully small number of iterations. Moreover, even if it will converge, the exclusion of classroom capacity constraints is a serious shortcoming of the multi-iteration procedure.

5. The Goals of Vocational Education

We now attempt a preliminary statement of the goals of the vocational education system, expressed as a quadratic loss function, in operational terms. This is subject to revision, and is intended only as a constructive demonstration of the feasibility of this approach. The single-iteration method is assumed.

The goals envisioned are (1) agreement of enrollment pattern with the pattern of potential employment, (2) effective use of the resources of the school system, (3) satisfaction of student aspirations, and (4) improvement of students' perception of job opportunities through vocational education and alternatives.

Goal number one is interpreted in terms of ratios. In the crudest form, let E_{ij} be the number of students enrolled in vocational education courses feeding job cluster i, for given student cohort j (cohort j is enrolled in year j). Let $E_j = \sum_{i=1}^{n} E_{ij}$. Let G_{ij} be the econometric projection of jobs available to cohort j in job cluster i. Let $G_j = \sum_{i=1}^{n} G_{ij}$. Then we may measure the loss due to a bad "fit" between enrollment and potential jobs by

$$\alpha_1 \left[\sum_{j=1}^{m} \sum_{i=1}^{n} \left(\frac{E_{ij}}{E_j} - \frac{G_{ij}}{G_j} \right)^2 \right] \tag{13}$$

for m successive cohorts and n job clusters. Clearly, we are interpreting the potential job ratio, job cluster/total, as a target for the enrollment ratio.

It may be possible to refine this indicator in at least two ways. First, not all students pass, and the failure ratio may vary from job cluster to job cluster. Let $(1-p_i)$ be the failure rate for job cluster i. Not all students who enroll in job cluster i will eventually be employed in that cluster, and some who have not enrolled or passed will be employed anyway. It may be that the longitudinal survey will offer data on these propensities. If so, let $(1-q_i)$ denote the propensity of graduates in job cluster i not to be employed in job cluster i, and let $(1-S_i)$ be the proportion of nongraduates employed in job cluster i. Then let

$$F_{ij} = p_i\, q_i\, E_{ij} \tag{14}$$

$$H_{ij} = S_i\, G_{ij} \tag{15}$$

and in place of (13) substitute

$$\alpha_1 \left[\sum_{j=1}^{m} \sum_{i=1}^{n} \left(\frac{F_{ij}}{\bar{F}_i} - \frac{H_{ij}}{\bar{H}_j} \right)^2 \right] \tag{16}$$

where the definition of F_j, H_j parallels that of E_j, G_j.

Goal number two is interpreted as a recognition of the transitional costs of making very large changes in the allocation of resources among job clusters or sectors of activity. Small reallocations can probably be achieved at modest cost by shifting existing faculty to alternative areas of competence. Large reallocations will require hiring of new faculty and (in current conditions) disemployment of existing faculty. These entail large administrative costs, and disemployment entails social costs. Similar problems may be involved to some extent, in the reallocation of nonhuman resources, but we assume (1) that these are relatively minor, and (2) that these are in any case, highly correlated with reallocation of faculty. Accordingly, let L_{ij} be the number of faculty assigned to job cluster i in year j, for i=1,...,n. Let $L_{n=1,j}$ be the number of counselors in year j. Then we measure the costs of transition by

$$\alpha_2 \left[\sum_{j=1}^{m} \sum_{i=1}^{n\;1} \frac{(L_{ij} - L_{i,j-1})^2}{L_{i,j-1}} \right] \qquad (17)$$

Thus, in effect, we take the last period's faculty allocation as a target. Notice that we require data on faculty allocation by job clusters in period 0, i.e., the year before the plan period begins.

The third goal is satisfaction of student aspirations, which would, in principle, include both pecuniary and nonpecuniary aspirations of students, as well as the direct demand of students to take the classes offered. We assume that the students' pecuniary aspirations are captured in (13) of (16) (and the importance of these goals should be reflected in the designation of α_1). Thus we now consider only the nonpecuniary goals and the direct class demands.

In the questionnaire, questions 9 through 20 deal with nonpecuniary job satisfaction. From the survey data, compute an average score representing the importance to students of each job characteristic k, which will be denoted by M_k. Note that M_k varies from 1 (very important) to 4 (not important at all) inversely with importance. Now for each job cluster the researchers should be able to judge whether a particular characteristic is largely present or absent. Denote N_{ik} by zero if characteristic k is absent, and by one if it is present, in job cluster k. The index for nonpecuniary satisfaction for cohort j is then

$$M_j = \sum_{i=1}^{n} \sum_{k=9}^{20} N_{ik} (1-M_k) \frac{F_{ij}}{F_j} \tag{18}$$

Now, M varies from i to 4, directly with aggregate potential nonpecuniary job satisfaction. Accordingly, we measure loss from less-than-perfect job satisfaction by

$$\sum_{j=1}^{m} \alpha_3 \frac{(M_j-4)^2}{4} \tag{19}$$

Notice that in all likelihood $M < 4$ by a fair margin. Thus, for comparability of goals it might be better to let

$$N_j = \operatorname*{SUP}_{i=1}^{n} [N_{ik} (1-M_k)] \tag{20}$$

and denote the loss from student dissatisfaction by

$$\alpha_3 \sum_{j=1}^{m} \frac{(M_j - N_j)^2}{N_j} \tag{21}$$

Notice that (18) will be among the constraints (see below).

The loss due to inability to admit students to class has a quite natural index, namely the number of students not admitted to class, and a natural goal, zero. For comparability it is better to use the proportions rather than the abolute numbers.

We have previously assumed that class sizes are constrained by physical facilities. That is, the previous enrollment variable, E_{ij}, is interpreted as a supply-of-classes variable, and with a given faculty in job cluster j and given facilities, E_{ij} is the optimum enrollment.

Let applications for enrollment be P_{ij} (assuming that data are available on this), and denote losses from these sources by

$$\alpha_4 \sum_{j=1}^{m} \sum_{i=1}^{n} \frac{(P_{ij} - E_{ij})^2}{E_{ij}} \tag{22}$$

The fourth goal is improved student perception of opportunities. Questions 1 through 3, 8 through 20, and 36 through 46 in the questionnaire pertain to student aspirations and to student perceptions of opportunity. In particular, questions 36 through 46 can be roughly evaluated as to "right" and "wrong" answers, and the students graded on the accuracy of their perceptions of these things. Denote the average "grade" of cohort j by Q_j. The "grade" will vary from zero to one, and one is the natural target. Then we denote the loss from this source by

$$\sum_{j=1}^{m} \alpha_5 (Q_j - 1)^2 \tag{23}$$

Thus, collecting terms, the objective (loss) function is:

$$\begin{aligned} W = {} & \alpha_1 \left[\sum_{j=1}^{m} \sum_{i=1}^{n} \left(\frac{F_{ij}}{F_j} - \frac{H_{ij}}{H_j}\right)^2 \right] \\ & + \alpha_2 \left[\sum_{j=1}^{m} \sum_{i=1}^{n+1} \left(\frac{L_{ij} - L_{i,j-1}}{L_{i,j-1}} \right)^2 \right] \\ & + \alpha_3 \left[\sum_{j=1}^{m} \left(\frac{M_j - N_j}{N_j}\right)^2 \right] \\ & + \alpha_4 \left[\sum_{j=1}^{m} \sum_{i=1}^{n} \left(\frac{P_{ij} - E_{ij}}{E_{ij}} \right)^2 \right] \\ & + \alpha_5 \sum_{j=1}^{m} (Q_j - 1)^2 \end{aligned} \tag{24}$$

since $\frac{F_{ij}}{F_j}, \frac{H_{ij}}{H_j}, \frac{L_{ij} - L_{i,j-1}}{L_{i,j-1}}, \frac{M_j - N_j}{N_j}, \frac{P_{ij} - E_{ij}}{E_{ij}},$

and Q_j fall in the range (0, 1), the uncontrolled variables are comparable as to scale, and so it should be feasible for the authorities to choose $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ in accordance with their subjective judgment of the relative importance of losses, without bias due to the incomparability of units. However, in some cases proportional uncontrolled variables impose nonlinearity on the constraints. Thus, an alternative procedure is suggested instead. Let E be an _a priori_ estimate of the average enrollment of the vocational education system over a number of years. Then let

$$\begin{aligned} W' = \alpha_1 & \left[\sum_{j=1}^{m} \sum_{i=1}^{n} \left(\frac{F_{ij} - H_{ij}}{F_j \; H_j} \right)^2 \right] \\ & + \alpha_2 \left[\sum_{j=1}^{m} \sum_{i=1}^{n+1} (L_{ij} - L_{i,j-1})^2 \right] \\ & + \alpha_3 \, E \left[\sum_{j=1}^{m} \left(\frac{M_j - N_j}{N_j} \right)^2 \right] \\ & + \alpha_4 \left[\sum_{j=1}^{m} \sum_{i=1}^{n} (P_{ij} - E_{ij}) \right]^2 \\ & + \alpha_5 \, E\left[\sum_{j=1}^{m} (Q_j - 1)^2 \right] \end{aligned} \tag{25}$$

6. Constraints

The fundamental constraint is a given budget. Let W_{ij} be the unit labor cost of faculty in job cluster i, in year j, and let R_{ij} be nonfaculty expenditure in job cluster i in year j. Let unit $W_{n+1,j}$ be unit labor cost of counselors and let $R_{N+1,j}$ be nonfaculty expenditures of counselors in year j. Let B_j be the budget in year j.

$$B_j = \sum_{i=1}^{n+1} W_{ij} L_{ij} + \sum_{i=1}^{n+1} R_{ij} \tag{26}$$

Recall that E_{ij} denotes enrollment capacity which must be estimated. Let

$$E_{ij} = g_{1i} + g_{2i} L_{ij} + g_{3i} R_{ij} + E_1 \tag{27}$$

Perhaps this estimate may be made on a cross-sectional basis, school by school; on the other hand, it may be that the data will limit the project to an estimate

$$\frac{E_{ij}}{L_{ij}} = g_i^* + E_1 \tag{28}$$

That is, an average ratio of availability of class places to faculty.

If the discussion in section 3 is valid, the estimate of (27) is likely to display heteroskedasticity. If (27) is determined as 3 above speculated, the correct specification must be convex.

Strictly speaking, E_j is an ex post sum of the E_{ij} but we take E as our a priori estimate of E_j. Then

$$F_j \underset{\cdot}{=} p_i q_i E \tag{29}$$

The constraint would then be

$$\frac{F_{ij}}{F_j} = \frac{p_i q_i}{F_j} E_{ij} \tag{30}$$

$$= \frac{1}{E} (g_{1i} + g_{2i} L_{ij} + g_{3i} R_{ij} + E_i)$$

The basis of M_j has already been given; the constraint required is (18) above.

The demand for class places by students P_i, must be estimated. The

$$P_{ij} = h_{ij} + h_{2j} L_{ij} + h_{3j} R_{ij} + h_{4j} L_{n+1,j} + h_{5j} R_{n+1,j} + h_{6j} T_j + E_2 \tag{31}$$

where T_j is an estimate of (so to speak) autonomous demand based on questions 25 through 37.

The student's perception of opportunities constraint must be estimated. The constraint is

$$Q_{ij} = k_{ij} + k_{2j} L_{n+1,j} + k_{3j} R_{n+1} + E_j \tag{32}$$

This completes the constraint structure. The controlled variables are

$$L_{ij},\ i=1,\ldots,n,n+1 \qquad R_{ij},\ i=1,\ldots,n,n+1 \tag{33}$$

BIBLIOGRAPHY

Blau, Peter and Otis D. Duncan. The American Occupational Structure. New York: John Wiley and Sons, 1967.

Bowles, Samuel. Planning Educational Systems for Economic Growth. Cambridge: Harvard University Press, 1969.

Buechner, William R. "Technological Change and the Occupational Composition of the American Labor Force 1950-1960." Doctoral dissertation, Harvard University, 1972.

Carey, Max L. "Revised Occupational Projections to 1985," Monthly Labor Review, November 1976.

Carnoy, Martin. "Educational Change: Past and Present." In Martin Carnoy (ed.) Schooling in a Corporate Society: The Political Economy of Education in America, 2nd ed. New York: David McKay Co., Inc., 1975.

Coombs, P. H. "Educational Planning in the Light of Economic Requirements." In Forecasting Manpower Needs for the Age of Science. Paris: O.E.E.C., 1960.

Corazzini, Arthur J. "The Decision to Invest in Vocational Education: An Analysis of Costs and Benefits." Journal of Human Resources, Supplement, Vocational Education 3:88-120, 1968.

Davenport, L. and R. Petty. Minorities and Career Education. Columbus: ECCA Publications, 1973.

Eckhaus, Richard S. "Economic Criteria for Education and Training," Review of Economics and Statistics, 46:181-190.

Equal Employment Opportunity Commission. Equal Employment Opportunity Report: Job Patterns for Minorities and Women in Private Industry, volume 2.

Featherman, David L., Michael Sobel and David Dickens. A Manual for Coding Occupations and Industries into Detailed 1970 Categories and a Listing of 1970 Basis Duncan Socioeconomic and N.O.R.C. Prestige Scores. Madison: Center for Demography and Ecology, 1975.

Haller, A. O. and A. Portes. "Status Attainment Processes," Sociology of Education, 46:51-91, 1973.

Hu, Teh-wei, Maw Lin Lee and Ernst W. Stromsdorfer, "Economic Returns to Vocational and Comprehensive High School Graduates," Journal of Human Resources, 6:25-50, 1971.

Kaufman, Jacob J., Ernst W. Stromsdorfer, Teh-wei Hu, and Maw L in Lee, An Analysis of the Comparative Costs and Benefits of Vocational versus Academic Education in Secondary Schools. University Park: Institute For Research on Human Resources of the Pennsylvania State University, 1967.

Kerchoff, A. C. and J. Huff. "Parental Influence on Educational Goals," Sociometry, 37:307-327, 1974.

Levitan, Sar A. Vocational Education and Federal Policy. Kalamazoo: Upjohn Institute for Employment Research, 1963.

Michigan Manufacturing Association, Lansing letter, February 1976, Fautus Report.

Mitchell, Robert B. Recycling the Inner City for Industrial Development. Report prepared for the Society of Industrial Realtors, May 1976.

O'Toole, James. Work, Learning and the American Future. San Francisco: Jossey-Bass, 1977.

Parnes, Herbert S. Forecasting Educational Needs for Economic and Social Development. Paris: Organization for Economic Cooperation and Development, 1962.

Pennsylvania Department of Labor and Industry. Pennsylvania Codes and Instructional Programs and Preferred Educational Requirements by Detailed Occupation Classification. Harrisburg: Pennsylvania Department of Labor and Industry, 1977.

_______, Bureau of Employment Security. Employment and Wages of Workers Covered by Pennsylvania Unemployment Compensation Law by County and Industry

_______. Pennsylvania Occupational Projections, 1974-1985. Harrisburg: 1976.

Philadelphia Board of Education. Enrollment 1976-1977 Philadelphia Public Schools. Prepared by the Division of Survey and Administrative Research Services, Office of Research and Evaluation: Philadelphia: Philadelphia Board of Education, 1977.

_______. 1976 Survey of Philadelphia High School Graduates. Prepared by the Division of Survey and Administrative Research Services, Office of Research and Evaluation. Philadelphia: Philadelphia Board of Education, 1977.

_______ Descriptions Applicable to the School District of Philadelphia. Mimeo describing vocational education programs. Philadelphia: Philadelphia Board of Education.

Porter, J. N. "Race, Socialization and Mobility in Educational and Early Occupational Attainment," American Sociological Review, 39:303-316, 1974.

Portes, A. and K. Wilson. "Black-white Differences in Educational Attainment," American Sociological Review, 41:414-431, 1976.

Schaefer, C. J. and J. J. Kaufman. New Directions for Vocational Education. Lexington: D. C. Heath and Co., 1971.

Scoville, James. "Educational and Training Requirements for Occupations," Review of Economics and Statistics, 48:387-394, 1966

Sewell, W. H , and R. M. Hauser. "Causes and Consequences of Higher Education: Models of the Status Attainment Process," American Journal of Agricultural Economics, 54:651-661, 1972.

Spring, Joel. The Sorting Machine: National Educational Policy since 1945. New York: David McKay Co., Inc., 1976.

Stromsdorfer, Ernst, Teh-wei Hu and Maw Lin Lee. "Theoretical and Empirical Problems in the Analysis of the Economic Costs of Vocational Education," 1968 Proceedings of the American Statistical Association, 144-152.

Taussig, Michael K. "An Economic Analysis of Vocational Education in the New York City High Schools," Journal of Human Resources, Supplement, Vocational Education 3:59-87, 1968.

U.S., Bureau of Employment Security. Dictionary of Occupational Titles. Washington: Government Printing Office, 1966.

U.S., Bureau of Labor Statistics, "Handbook of Methods," BLS Bulletin, 1910.

________. "Occupational Supply, Concepts and Sources of Data for Manpower Analysis," Bulletin No. 1816 Washington: Government Printing Office, 1974.

________. "Tomorrow's Manpower Needs," BLS Bulletin 1606, Vols. I-IV (1969), Supplements 1 and 2 (1970).

U.S., Department of Health, Education and Welfare and Department of Labor Vocational Education and Occupations. Washington: Government Printing Office, 1969.

U.S., Department of Labor, Manpower Report of the President. Washington: Government Printing Office, 1966.

U.S., Employment and Training Report of the President. Washington: Government Printing Office, 1976.

APPENDIX A

ALPHABETICAL INDEX OF OCCUPATIONS AND CODES

BLS	Bureau of Labor Statistics (D.O.T.)
CEN	U.S. Census of Occupations
HEGIS-VOC. ED	Higher Education and Vocational Education (VEMIS - HEGIS)
ED	APPELCODE - level of training code

INDUSTRY BY OCCUPATION TAPES CODE

OCCUPATIONAL TITLE

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    BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES     ED

      1 160.188   -0.000  502      0 -0.000000 -0.000000 40 10240050 ACCOUNTANTS
    175 150.048   -0.000 1007      0 -0.000000 -0.000000 30 10220050 ACTORS
     34  20.188   -0.000 1703      0 -0.000000 -0.000000 40 10060050 ACTUARIES
      0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 20040000 ADMINSTRATORS, PUB INSPECTOR
    141  99.228   -0.000  007      0 -0.000000 -0.000000 40 10200050 ADULT EDUCATION TEACHERS
    260 250.000   -0.000   -0      0  4.010000 -0.000000 20 30000050 ADVERTISING AGENTS, SALES WKRS
     42  13.000   -0.000  100      0 -0.000000 -0.000000 40 10040050 AGRICULTURAL SCIENTISTS
    150  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 10000050 AGRI, BIOLOG TECH EXC HEALTH
    471 621.281   -0.000   -0      0 17.040100 -0.000000 30 50000100 AIRCRAFT MECHANICS
    163 196.283   -0.000 5302      0 -0.000000 -0.000000 50 10140050 AIRPLANE PILOTS
    470 637.000   -0.000   -0      0 17.010100 17.010200 30 50000050 AIR COND, HEATING, REFRIG
    164 193.168   -0.000   -0      0 17.040300 -0.000000 30 10140100 AIR TRAFFIC CONTROLLERS
    740 356.000   -0.000   -0      0  1.990000 -0.000000 20 80000050 ANIMAL CARETAKERS, EXC FARM
      2   1.001   -0.000  202      0 -0.000000 -0.000000 40 10240100 ARCHITECTS
     33 101.168  102.118   -0      0 -0.000000 -0.000000 40 10240150 ARCHIVISTS AND CURATORS
    601 863.884   -0.000   -0      0 17.109900 -0.000000 30 61000050 ASBESTOS, INSULATION WORKERS
    602 739.000   -0.000   -0      0 -0.000000 -0.000000 99 61000100 ASSEMBLERS
    201 186.000  188.000 2102      0 -0.000000 -0.000000 40 20040050 ASSESS, CONTROL, LOC PUB ADMIN
    180 153.348   -0.000  835      0 -0.000000 -0.000000 99 10220100 ATHLETES AND KINDRED WORKERS
[illegible] 25.600   -0.000 1913      0 -0.000000 -0.000000 40 10040100 ATMOSPHERE, SPACE SCIENTISTS
    933  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 70000150 ATTEN, PERSONAL SERVICE, NEC
    932 349.000  349.000   -0      0 -0.000000 -0.000000 99 70040100 ATTEN, RECREATION, AMUSEMENT
    261 294.258   -0.000   -0      0  4.080000 -0.000000 30 30000100 AUCTIONEERS
    181 130.139    0.000 1507      0 -0.000000 -0.000000 40 10220150 AUTHORS
    401 806.884   -0.000   -0      0 17.230400 -0.000000 20 50000150 AUTO ACCESSORIES INSTALLERS
    472 807.381   -0.000   -0      0 17.030100 -0.000000 30 50000200 AUTO BODY REPAIRERS
    473 620.281   -0.000   -0      0 17.030200 -0.000000 30 50000250 AUTO MECHANICS AND APPRENT
    474 620.281   -0.000   -0      0 17.030200 -0.000000 30 50000250 AUTO MECHANICS AND APPRENT
    934 324.878   -0.000   -0      0  4.110000 -0.000000 20 70000200 BAGGAGE PORTERS AND BELLHOPS
    402 526.781   -0.000   -0      0 17.290100 -0.000000 30 50140050 BAKERS
    301 212.368   -0.000   -0      0 14.010500 -0.000000 20 40060050 BANK TELLERS
    202 186.118   -0.000  504      0 -0.000000 -0.000000 40 20020500 BANK, FINANCIAL MANAGERS
    935 330.371   -0.000   -0      0 17.260100 -0.000000 34 70000250 BARBERS
    910 312.878   -0.000   -0      0 -0.000000 -0.000000 30 70040050 BARTENDERS
    303 219.388   -0.000   -0      0 14.030300 -0.000000 20 40000100 BILLING CLERKS
     44  41.081   -0.000  401      0 -0.000000 -0.000000 40 10040150 BIOLOGICAL SCIENTISTS
    403 610.381   -0.000   -0      0 17.239900 -0.000000 34 50060050 BLACKSMITHS
    603 859.281   -0.000   -0      0 17.109900 -0.000000 30 61000150 BLASTERS
    902 381.887   -0.000   -0      0 17.110000 -0.000000 20 70020100 BLDG INTERIOR CLEANERS, NEC
    441  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 53040000 BLUE COLLAR WRKS SUPVR NEC
    940 320.000   -0.000   -0      0  4.110000 -0.000000 20 70000300 BOARDING, LODGING HOUSEKEEPERS
    701 911.883   -0.000   -0      0 17.080200 -0.000000 20 62000050 BOAT OPERATORS
    404 805.281   -0.000   -0      0 17.105900 -0.000000 34 50060100 BOILERMAKERS
    405 977.781   -0.000   -0      0 17.190600 -0.000000 30 50100050 BOOKBINDERS
    305 210.388   -0.000   -0      0 14.010200 -0.000000 31 40060150 BOOKKEEPERS
    341 214.488  215.388   -0      0 14.010400 -0.000000 23 40040050 BOOKKEEPING, BILLING OPERA
    941 366.878   -0.000   -0      0 -0.000000 -0.000000 99 70000350 BOOTBLACKS
    604  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 61000200 BOTTLING,CANNING OPERATIVES
    410 861.000   -0.000   -0      0 17.100400 -0.000000 34 50020150 BRICK AND STONEMASONS AND APPR
    411 861.000   -0.000   -0      0 17.100400 -0.000000 34 50020150 BRICK AND STONEMASONS AND APPR
    412 850.883   -0.000   -0      0 17.100302 -0.000000 34 50020250 BULLDOZER OPERATORS
    703 913.463   -0.000   -0      0  4.190600 -0.000000 30 62000100 BUS DRIVERS
      0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 20020000 BUYERS, SALES, LOAN MANAGERS
    203 162.000   -0.000  509      0 -0.000000 -0.000000 31 20020150 BUYERS, SHIPPERS, FARM PRODUCT
    205 162.158   -0.000   -0      0  4.000000 -0.000000 31 20020200 BUYERS, WHOLESALE, RETAIL
    413 660.280   -0.000   -0      0 17.360100 -0.000000 30 50140600 CABINETMAKERS
```

```
342 216.400  -0.000    -0      0 14.310400 -0.000000 20 40040100 CALCULATING MACHINE OPERATOR
670 600.400  -0.000    -0      0 17.339500 -0.000000 20 61040050 CARDING, LAPPING, COMBINE
415 860.301  -0.000    -0      0 17.100100 -0.000000 34 50020050 CARPENTERS AND APPRENTICES
416 860.301  -0.000    -0      0 17.100100 -0.000000 34 50020050 CARPENTERS AND APPRENTICES
750 860.000  -0.000    -0      0 17.100100 -0.000000 20 80000100 CARPENTERS HELPERS
420 259.301  -0.000    -0      0 17.109500 -0.000000 30 50140150 CARPET INSTALLERS
310 211.360  -0.000    -0      0 14.010300 -0.000000 20 40060200 CASHIERS
421 844.004  -0.000    -0      0 17.109500 -0.000000 34 50020300 CEMENT AND CONCRETE FINISHERS
616  -0.000  -0.000    -0      0  4.000000 -0.000000 20 61060090 CHECKERS, EXAMINERS, ETC,MFG
151  22.201  -0.000  5305      0 -0.000000 -0.000000 32 10040100 CHEMICAL TECHNICIANS
 45  22.001  -0.000  1905      0 -0.000000 -0.000000 43 10040200 CHEMISTS
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 70120090 CHILD CARE WORKERS
942 359.070  -0.000    -0      0  9.020100 -0.000000 20 70000400 CHILD CARE WORKERS, EXC PRI
 61  79.100  -0.000  1221      0 -0.000000 -0.000000 51 10100050 CHIROPRACTORS
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 70020000 CLEANING SERVICE WORKERS
 86 120.100  -0.000  2301      0 -0.000000 -0.000000 40 10240200 CLERGY
311 209.500  -0.000    -0      0 14.039500 -0.000000 20 40060250 CLERICAL ASSIST, SOC WELFARE
312 169.160  -0.000    -0      0 14.020500 -0.000000 30 40060300 CLERICAL SUPERVISORS, NEC
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 40000000 CLERICAL WORKERS
 80  78.201  -0.000  1223      0 -0.000000 -0.000000 40 10120050 CLINICAL LAB TECHNOL, TECH
611 363.004  -0.000    -0      0 17.160000 17.160200 20 61000300 CLOTHING IRONERS AND PRESSER
313 240.360  -0.000    -0      0  4.020000 -0.000000 20 40060350 COLLECTORS, BILL + ACCOUNT
140  90.220  -0.000   806      0 -0.000000 -0.000000 51 10200100 COLLEGE AND UNIVERSITY TEACHER
422 973.201  -0.000    -0      0 17.190100 -0.000000 33 50100100 COMPOSITORS AND TYPESETTERS
  3  20.100  -0.000   704      0 -0.000000 -0.000000 30 10160050 COMPUTER PROGRAMMERS
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 10160000 COMPUTER SPECIALISTS
  4  20.000  -0.000   705      0 -0.000000 -0.000000 40 10160100 COMPUTER SYSTEMS ANALYSTS
343 213.302  -0.000    -0      0 14.020200 -0.000000 32 40040150 COMPUTER, PERIPHERAL EQUIP
704 910.060  -0.000    -0      0 -0.000000 -0.000000 99 62000150 CONDUCTORS AND OPR, URBAN RAIL
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 50020000 CONSTRUCTION CRAFTS WORKERS
751  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 80000150 CONSTR LABR,EXC CARPENTER HELP
213 160.000  -0.000    -0      0 17.289500 -0.000000 31 20040100 CONSTRUCTION INSPECTOR, PUB
901 305.201  -0.000    -0      0  9.020300 -0.000000 20 70120100 COOKS,PRIVATE
912 313.000 314.000    -0      0 17.290200 -0.000000 34 70040150 COOKS, EXC PRIVATE
314 223.500  -0.000    -0      0 -0.000000 -0.000000 20 40060400 COUNTER CLERKS, EXC FOOD
  0  -0.000  -0.000    -0     -0 -0.000000 -0.000000 -0 50000000 CRAFTS AND KINDRED WORKERS
571  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 50141200 CRAFTS AND KINDRED WRKRS,NEC
575  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 50141200 CRAFTS AND KINDRED WRKRS,NEC
424 921.000  -0.000    -0      0 17.100302 -0.000000 20 50140200 CRANE,DERRICK,AND HOIST OPR
210 160.160  -0.000    -0      0 14.009500 -0.000000 40 20020100 CREDIT MANAGERS
960 371.000  -0.000    -0      0 -0.000000 -0.000000 99 70100050 CROSSING GUARD, BRIDGETENDERS
612  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 61000350 CUTTING OPERATIVES, NEC
182 151.040  -0.000  1008      0 -0.000000 -0.000000 30 10220200 DANCERS
479 828.201  -0.000    -0      0 16.010000 -0.000000 30 50000350 DATA PROCESSING MACHINE REPAIR
425 290.000  -0.000    -0      0  4.010600 -0.000000 30 50140250 DECORATORS, WINDOW DRESSERS
705 252.000 906.000    -0      0 -0.000000 -0.000000 30 62000200 DELIVERY AND ROUTE WORKERS
262 297.450  -0.000    -0      0  4.000000 -0.000000 20 30000150 DEMONSTRATORS
921  79.370  -0.000    -0      0  7.010100 -0.000000 30 70060050 DENTAL ASSISTANTS
 81  78.360  -0.000  5203      0 -0.000000 -0.000000 31 10120100 DENTAL HYGENISTS
426 712.301  -0.000    -0      0  7.010300 -0.000000 30 50140300 DENTAL LABORATORY TECH
 62  72.100  -0.000  1204      0 -0.000000 -0.000000 51 10100100 DENTISTS
183 142.001  -0.000  1009      0 -0.000000 -0.000000 40 10220250 DESIGNERS
 74  77.160  -0.000  1306      0 -0.000000 -0.000000 40 10100150 DIETITIANS
913 310.007  -0.000    -0      0 -0.000000 -0.000000 99 70040200 DISHWASHERS
315  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 40060450 DISPATCHER, STARTER, VEHICLE
152  17.000  -0.000    -0      0 17.136000 -0.000000 32 10040150 DRAFTERS
613 705.361  -0.000    -0      0  9.020200 -0.000000 34 61[illegible] DRESSMAKERS, EXC FACTORY
614  -0.000  -0.000    -0      0 -0.000000 -0.000000 99 610[illegible] DRILLERS,EARTH
650 606.702  -0.000    -0      0 17.230300 -0.000000 30 6102[illegible] DRILL PRESS OPERATIVES
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615 842.000  -0.000    -0     0 17.100000 17.100000 30 61000500 DRY WALL INSTALLERS, LATHES
344 287.004  -0.000    -0     0 14.030100 -0.000000 20 40040200 DUPLICATING MACHINE OPERATOR
620 502.130  -0.000    -0     0 -0.000000 -0.000000 99 61000550 DYERS
 91  50.088  -0.000  2204     0 -0.000000 -0.000000 40 10100050 ECONOMISTS
184 132.000  -0.000   602     0 -0.000000 -0.000000 40 10220300 EDITORS AND REPORTERS
153   3.101  -0.000  5317  5310 -0.000000 -0.000000 32 10080200 ELECTRICAL, ELECTRONIC TECH
430 624.201  -0.000    -0     0 17.100200 -0.000000 34 50020350 ELECTRICIANS AND APPRENTICES
431 624.201  -0.000    -0     0 17.100200 -0.000000 34 50020350 ELECTRICIANS AND APPRENTICES
434 974.381 975.782    -0     0 17.190100 -0.000000 30 50100150 ELECTROTYPERS, STEREOTYPERS
433  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 50120050 ELEC PWR LINE INSTAL,REPRS
102  90.228  -0.000   005     0 -0.000000 -0.000000 51 10200550 ELEMENTARY SCHOOL TEACHERS
943 380.868  -0.000    -0     0 -0.000000 -0.000000 99 70080450 ELEVATOR OPERATORS
165 330.381  -0.000    -0     0  7.090900 -0.000000 31 10140150 EMBALMERS
162  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 10000450 ENGINEERING, SCIENCE TECH NEC
 12   3.001  -0.000   909     0 -0.000000 -0.000000 40 10020200 ENGINEERS, ELECTRICAL
 14   7.001  -0.000   910     0 -0.000000 -0.000000 40 10020300 ENGINEERS, MECHANICAL
 15  11.001  -0.000   914     0 -0.000000 -0.000000 40 10020350 ENGINEERS, METALLURGICAL
 20  10.001  -0.000   918     0 -0.000000 -0.000000 40 10020400 ENGINEERS, MINING
 23  19.000  -0.000    -0     0 -0.000000 -0.000000 99 10020550 ENGINEERS, OTHER
 21  10.001  -0.000   907     0 -0.000000 -0.000000 40 10020450 ENGINEERS, PETROLEUM
 22  10.000  -0.000    -0     0 -0.000000 -0.000000 99 10020500 ENGINEERS, SALES
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 10000000 ENGINEERS, SCIENCE TECHNICIANS
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 10020000 ENGINEERS, TECHNICAL
  6   2.000  -0.000   902     0 -0.000000 -0.000000 99 10020050 ENGINEERS,AERO-ASTRONAUTIC
 10   6.001  -0.000   906     0 -0.000000 -0.000000 40 10020100 ENGINEERS,CHEMICAL
 11   5.001  -0.000   908     0 -0.000000 -0.000000 40 10020150 ENGINEERS,CIVIL
 13  12.100  -0.000   913     0 -0.000000 -0.000000 40 10020250 ENGINEERS,INDUSTRIAL
435 979.000  -0.000    -0     0 17.199900 -0.000000 30 50100200 ENGRAVERS, EXC PHOTOENGRAVERS
220 166.268 245.268    -0     0 14.060200 -0.000000 40 40060500 ENUMERATORS + INTERVIEWERS
321 160.000 245.000    -0     0 14.010100 14.990000 20 40060550 ESTIMATORS, INVESTIGATORS, NEC
436 650.000  -0.000    -0     0 17.100302 -0.000000 34 50020450 EXCAVATING, GRADING, MACH OP
323 221.000 222.000    -0     0 14.050100 14.050300 20 40060600 EXPEDITORS, PROD CONTROLLERS
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 90020000 FARMERS AND FARM MANAGERS
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 90000000 FARMERS AND FARM WORKERS
801 421.000  -0.000    -0     0  1.010000  1.010400 99 90020050 FARMERS (OWNERS AND TENANTS)
480 624.281  -0.000    -0     0  1.030100 -0.000000 30 50080400 FARM IMPLEMENT
821 429.131  -0.000    -0     0  1.010000 -0.000000 99 90040050 FARM LABOR SUPERVISORS
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 90040000 FARM LABORERS, FARM SUPERVISOR
824  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 90040200 FARM LABORERS, SELF-EMPLOYED
823  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 90040150 FARM LABORERS, UNPAID FAMILY
822  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 90040100 FARM LABORERS, WAGE WORKERS
 24  56.120  -0.000   110     0 -0.000000 -0.000000 40 10240300 FARM MANAGEMENT ADVISORS
802 409.160  -0.000    -0     0  1.010400 -0.000000 99 90020100 FARM MANAGERS
621 705.004  -0.000    -0     0 17.239900 -0.000000 20 61000600 FILER,POLISHER,SANDER,BUFFER
325 206.300  -0.000    -0     0 14.030200 -0.000000 20 40060650 FILE CLERKS
961 373.384  -0.000    -0     0 17.200100 -0.000000 30 70100100 FIREFIGHTERS
752 430.000 450.000    -0     0  1.060400 17.000000 20 00000200 FISHERS, HUNTERS AND TRAPPERS
931 352.878  -0.000    -0     0  4.190000 -0.000000 30 70080050 FLIGHT ATTENDANTS
170 621.281  -0.000    -0     0 17.040200 -0.000000 33 10140200 FLIGHT ENGINEERS
440 864.781  -0.000    -0     0 17.105900 -0.000000 30 50020500 FLOOR LAYERS, EXC TILE SETTER
914 319.078  -0.000    -0     0 17.290400 -0.000000 20 70060250 FOOD COUNTER, FOUNTAIN WORKERS
  0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0 70040000 FOOD SERVICE WORKERS
916  -0.000  -0.000    -0     0 -0.000000 -0.000000 99 70040350 FOOD WORKERS, NEC, EXC PRIVATE
 25 441.000  -0.000   114   115 -0.000000 -0.000000 40 10240350 FORESTERS, CONSERVATIONISTS
442 610.000  -0.000    -0     0 17.239900 -0.000000 30 50060200 FORGE AND HAMMER OPERATORS
706 919.000 922.000    -0     0 -0.000000 -0.000000 99 62000250 FORK LIFT,TOW MOTOR OPERATIVES
753 222.687  -0.000    -0     0 14.050300 -0.000000 20 60000250 FREIGHT, MATERIAL HANDLERS
211 107.160  -0.000    -0     0  4.150000 -0.000000 09 20000050 FUNERAL DIRECTORS
666 551.085  -0.000    -0     0 17.320000 -0.000000 34 61001400 FURNACE TENDR, STOKR METAL
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622 582.000  -0.000   -0     0 17.230100 -0.000000 30 61020100 FURNACE TENDRS,SMELTRS,POURER
443 763.301  -0.000   -0     0 17.360100 -0.000000 30 50140350 FURNITURE AND WOOD FINISHER
444 142.001  -0.000   -0     0 -0.000000 -0.000000 99 50140400 FURRIERS
623 915.267  -0.000   -0     0  4.160000 -0.000000 20 61000650 GARAGE WRKRS,GAS STATION ATTEN
754 909.000  -0.000   -0     0 -0.000000 -0.000000 99 80000300 GARBAGE COLLECTORS
755 304.000 407.000   -0     0  1.050400 -0.000000 20 80000350 GARDENERS,GROUNDKEEPR,EXC FARM
 51  24.001  -0.000 1914     0 -0.000000 -0.000000 40 10040250 GEOLOGISTS
445 865.701  -0.000   -0     0 17.100900 -0.000000 30 50140450 GLAZIERS
624  -0.000  -0.000   -0     0  4.000000 -0.000000 20 61060100 GRADERS AND SORTERS, MFG
651 705.000  -0.000   -0     0 17.239500 -0.000000 30 61020150 GRINDING MACHINE OPERATIVES
962 372.060  -0.000   -0     0 -0.000000 -0.000000 99 70100150 GUARDS
944 232.071  -0.000   -0     0 17.260200 -0.000000 34 70000500 HAIRDRESSERS, COSMETOLOGISTS
212 187.000  -0.000 1202     0 -0.000000 -0.000000 51 20040150 HEALTH ADMINISTRATOSR
922  -0.000  -0.000   -0     0 -0.000000 -0.000000 99 70060100 HEALTH AIDES, EXC NURSING
 82 249.300  -0.000 5213     0 -0.000000 -0.000000 31 10120150 HEALTH RECORD TECHNOL, TECH
  0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0 70060000 HEALTH SERVICE WORKERS
  0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0 10120000 HEALTH TECHNOL AND TECH
923  -0.000  -0.000   -0     0 -0.000000 -0.000000 99 70060150 HEALTH TRAINEES
626 504.000  -0.000   -0     0 17.240000 -0.000000 30 61020200 HEATERS, METAL
446 504.702  -0.000   -0     0 17.240000 -0.000000 30 50060150 HEAT TREATERS, ANNEALERS ETC
481 620.000  -0.000   -0     0 17.100301 -0.000000 30 50080450 HEAVY EQUIP MECH, INCL DEISEL
 26  96.120  -0.000 1304     0 -0.000000 -0.000000 40 10240400 HOME MANAGEMENT ADVISORS
482 827.201  -0.000   -0     0 17.020000 -0.000000 30 50080500 HOUSEHOLD APPLIANCE MECHAN
950 321.000  -0.000   -0     0  9.020500 -0.000000 20 70000550 HOUSEKEEPERS, EXC PRIVATE
982 303.130  -0.000   -0     0  9.020500 -0.000000 20 70120150 HOUSEKEEPERS, PRIVATE HOUSE
264 291.050  -0.000   -0     0  4.060000 -0.000000 20 30000200 HUCKSTERS AND PEDDLERS
154  12.200  -0.000 5312     0 -0.000000 -0.000000 32 10000250 INDUSTRIAL ENGINEERING TECH
215 160.160  -0.000   -0     0 17.209900 -0.000000 31 20040200 INSPECTORS, EXC CONTRUCT PUB
450 941.000  -0.000   -0     0 -0.000000 -0.000000 99 50140500 INSPECTORS, LOG AND LUMBER
452   2.000  -0.000   -0     0 -0.000000 -0.000000 99 50140550 INSPECTORS, OTHER
326 241.160  -0.000   -0     0  4.130000 -0.000000 40 40060700 INSURANCE ADJUST, EXAMINERS
265 250.250  -0.000   -0     0  4.130000 -0.000000 30 30000250 INSURANCE AGENTS, BROKERS, ETC
903 382.084  -0.000   -0     0 17.110000 -0.000000 20 70020150 JANITORS AND SEXTONS
453 700.000 715.000   -0     0 17.210200 -0.000000 30 50140600 JEWELERS AND WATCHMAKERS
454 600.600 601.000   -0     0 17.230200 17.230700 20 50060250 JOB AND DIE SETTERS, METAL
 30 111.100  -0.000 1400     0 -0.000000 -0.000000 51 10240450 JUDGES
345 213.582  -0.000   -0     0 14.020201 -0.000000 20 40040250 KEYPUNCH OPERATORS
671 605.000  -0.000   -0     0 17.339500 -0.000000 20 61040100 KNITTERS, LOOPERS, AND TOPPERS
  0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0 60000000 LABORERS, EXCEPT FARM
652 604.000  -0.000   -0     0 17.230300 -0.000000 30 61020250 LATHE, MILLING MACH OPERATIVE
983 302.007  -0.000   -0     0  9.020200 -0.000000 20 70120200 LAUNDERERS, PRIVATE HOUSEHOLD
630 361.000 362.000   -0     0 17.160100 17.160200 34 61000700 LAUNDRY,DRY CLEANING OPRS, NEC
 31 110.100  -0.000 1401     0 -0.000000 -0.000000 51 10240500 LAWYERS
924 354.078  -0.000   -0     0  7.030200 -0.000000 21 70060200 LAY MIDWIVES
 32 100.160  -0.000 1601     0 -0.000000 -0.000000 51 10240550 LIBRARIANS
330 249.360  -0.000   -0     0 14.045500 -0.000000 33 40060750 LIBRARY ATTENDANTS, ASSIST
  0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0 10040000 LIFE AND PHYSICAL SCIENTISTS
 54  -0.000  -0.000   -0     0 -0.000000 -0.000000 99 10040400 LIFE, PHYSICAL SCIENTISTS NEC
455 910.383  -0.000   -0     0 -0.000000 -0.000000 99 50120100 LOCOMOTIVE ENGINEERS
456 910.383  -0.000   -0     0 -0.000000 -0.000000 99 50120150 LOCOMOTIVE ENGINEER HELPERS
901 323.887  -0.000   -0     0  9.020500 -0.000000 20 70020050 LODGING QUARTRS CLEANRS,EXC PR
760 911.000 922.000   -0     0 -0.000000 -0.000000 99 80000400 LONGSHORE WORKERS, STEVEDORES
403 683.280  -0.000   -0     0 17.339900 -0.000000 30 50080550 LOOM FIXERS
461 660.000  -0.000   -0     0 17.230200 -0.000000 30 50060300 MACHINIST AND APPRENTICES
462 600.000  -0.000   -0     0 17.230200 -0.000000 30 50060300 MACHINIST AND APPRENTICES
331 233.300  -0.000   -0     0 14.040300 -0.000000 20 40060000 MAIL CARRIERS, POST OFFICE
332 231.500  -0.000   -0     0 14.040200 -0.000000 20 40060050 MAIL HANDLER, EXC POST OFFICE
  0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0 20000000 MANAGERS, OFFICIALS, PROPRIETO
 52  24.001  -0.000  410  1919 -0.000000 -0.000000 40 10040300 MARINE SCIENTISTS
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562   -0.000   -0.000    -0      0 -0.000000 -0.000000 30 70100200 MARSHALS AND CONSTABLES
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 10060000 MATHEMATICAL SPECIALISTS
196   20.100   -0.000  1701      0 -0.000000 -0.000000 32 10000300 MATHEMATICAL TECHNICIANS
 35   20.100   -0.000  1701      0 -0.000000 -0.000000 40 10060100 MATHEMATICIANS
631  316.004   -0.000    -0      0 17.290300 -0.000000 30 61040750 MEAT CUTTERS,BUTCHERS, EXC MFG
633  525.301   -0.000    -0      0  1.040100 -0.000000 20 61000000 MEAT CUTTERS, BUTCHERS
634  223.000   -0.000    -0      0  4.000000 -0.000000 20 61060150 MEAT WRAPPERS, RETAIL TRADE
155    7.101   -0.000  5315      0 -0.000000 -0.000000 32 10080350 MECHANICAL ENGINEERING TECH
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 50000000 MECHANICS, REPAIRERS, INSTAL
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 10100000 MEDICAL WORKERS, EXC TECH
333  230.070   -0.000    -0      0 14.040500 -0.000000 20 40060900 MESSENGERS + OFFICE HELPERS
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 50060000 METALWORKING CRAFT WRKRS, EXC
635  500.000   -0.000    -0      0 17.235500 -0.000000 30 61020300 METAL PLATERS
334  239.500   -0.000    -0      0 14.045560 -0.000000 20 40060950 METER READERS, UTILITIES
216  107.160   -0.000    -0      0 -0.000000 -0.000000 99 20060100 MGRS, SUPERINTENDANTS, BLDG
636  704.201   -0.000    -0      0 17.335500 -0.000000 20 61000850 MILLENERS
301  521.000   -0.000    -0      0  1.020200  1.040100 20 50140650 MILLERS, GRAIN, FLOUR, FEED
562  630.201   -0.000    -0      0 17.105500 -0.000000 34 50060400 MILLWRIGHTS
640  539.000   -0.000    -0      0 -0.000000 -0.000000 30 61006900 MINE OPERATIVES, NEC
394   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 40061700 MISC CLERICAL WORKERS,NEC
395   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 40061700 MISC CLERICAL WORKERS,NEC
690   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 61001500 MISC MACH OPERATIVES
641  550.005   -0.000    -0      0 -0.000000 -0.000000 30 61000950 MIXING OPERATIVES
503  510.301   -0.000    -0      0 17.230100 -0.000000 30 50060450 MOLDERS, METAL AND APPRENTICE
504  510.301   -0.000    -0      0 17.230100 -0.000000 30 50060450 MOLDERS, METAL AND APPRENTICE
505  560.302   -0.000    -0      0 -0.000000 -0.000000 30 50140700 MOTION PICTURE PROJECTIONIST
185  152.000   -0.000  1004      0 -0.000000 -0.000000 40 10220350 MUSCIANS AND COMPOERS
266  291.060   -0.000    -0      0 -0.000000 -0.000000 99 30000300 NEWSPAPER CARRIER AND VENDOR
925  355.070   -0.000    -0      0  7.030300 -0.000000 30 70060250 NURSES AIDES, ORDERLIES
221  197.000   -0.000    -0      0 -0.000000 -0.000000 99 20060200 OFFICERS, PILOTS, PURSERS, SHI
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 40040000 OFFICE MACHINE OPERATORS
404  633.201   -0.000    -0      0 17.060000 -0.000000 30 50000600 OFFICE MACHINE REPAIRERS
220  165.160   -0.000    -0      0 14.000500 -0.000000 20 20060250 OFFICE MANAGERS, NEC
223   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 20060250 OFFICIALS OF LODGES, UNIONS
222  100.000   -0.000  2102      0 -0.000000 -0.000000 40 20040250 OFFICIALS, ADMINS, PUB
642  695.007   -0.000    -0      0 -0.000000 -0.000000 20 61001000 OILERS, GREASERS, EXC AUTO
 55   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10240600 OPERATIONS, SYSTEMS RESEARCH
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 60000000 OPERATIVES
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 61000000 OPERATIVES, EXC TRANSPORT
695   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 61001550 OPERATIVES, NEC
506  713.000   -0.000    -0      0 17.210100 -0.000000 30 50140750 OPTICIANS, LENS GRINDR, POLSH
 63   79.100   -0.000  1209      0 -0.000000 -0.000000 51 10100200 OPTOMETRISTS
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 40000000 OTHER CLERICAL WORKERS
  5   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10160150 OTHER COMPUTER SPECIALISTS
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 50140000 OTHER CRAFTS, KINDRED WRKRS
 85   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10120300 OTHER HEALTH TECHNOL, TECH
700   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 00000700 OTHER LABORERS
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 20060000 OTHER MANAGERS, OFFICIALS, PRC
495   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 50000750 OTHER MECHANICS AND APPREN
 73   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10100550 OTHER MEDICAL AND HEALTH WKR
245   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 20060400 OTHER MGRS, ADMINISTRATORS
355   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 40040350 OTHER OFFICE MACHINE OPERATOR
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 61000000 OTHER OPERATIVES,EXC TRANSP
653   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 61020350 OTHER PRECISION MACH OPERATOR
  0   -0.000   -0.000    -0     -0 -0.000000 -0.000000 -0 10240000 OTHER PROFESSIONAL,TECHNICAL
 56   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10100300 OTHER SOCAIL SCIENTISTS
173   -0.000   -0.000    -0      0 -0.000000 -0.000000 99 10140350 OTHER TECHNICIANS EXC HEALTH
643  920.000   -0.000    -0      0  4.000000 -0.000000 20 61060200 PACKER,WRAPPER,EXC MEAT, PROD
510  840.000   -0.000    -0      0 17.100500 -0.000000 34 50020550 PAINTERS AND APPRENTICES
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511 840.300   -0.000   -0     0 17.100500 -0.000000 34 50020550 PAINTERS AND APPRENTICES
196 144.000  149.000 1002     0 -0.000000 -0.000000 40 10220400 PAINTERS AND SCULPTORS
644  -0.000   -0.000   -0     0 -0.000000 -0.000000 99 61001050 PAINTERS, MFG ARTICLES
512 841.000   -0.000   -0     0 17.100500 -0.000000 34 50020650 PAPERHANGERS
711 915.878   -0.000   -0     0  4.030000 -0.000000 30 62000350 PARKING ATTENDANTS
514 693.000   -0.000   -0     0 17.235900 -0.000000 30 50060550 PATTERN AND MODEL MAKERS
369 215.000  219.000   -0     0 14.010400 14.030300 20 40061000 PAYROLL, TIME KEEPING CLERKS
  0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0 70000000 PERSONAL SERVICE WORKERS
 56 166.000  169.000  916     0 -0.000000 -0.000000 40 10240650 PERSONNEL LABOR RELATIONS
 64  74.181   -0.000 1211     0 -0.000000 -0.000000 40 10100250 PHARMACISTS
515 971.890   -0.000   -0     0 17.190400 -0.000000 30 50100250 PHOTOENGRAVERS, LITHOGRAPHER
191 143.062   -0.000 1011     0 -0.000000 -0.000000 30 10220450 PHOTOGRAPHERS
649 976.000  976.000   -0     0 17.090100 -0.000000 30 61001100 PHOTOGRAPHIC PROCESS WORKERS
 65  70.108   -0.000 1206  1210 -0.000000 -0.000000 51 10100300 PHYSICIANS, MD OSTEOPATHS
 53  21.000   23.081 1911  1902 -0.000000 -0.000000 50 10040350 PHYSICISTS AND ASTRONOMERS
516 730.000   -0.000   -0     0 -0.000000 -0.000000 30 50140000 PIANO,ORGAN TUNERS,REPAIRERS
520 842.781   -0.000   -0     0 17.100600 -0.000000 34 50020700 PLASTERS AND APPRENTICES
521 842.781   -0.000   -0     0 17.100600 -0.000000 34 50020700 PLASTERS AND APPRENTICES
522 862.381   -0.000   -0     0 17.100700 -0.000000 34 50020800 PLUMBERS, PIPEFITTERS AND APPR
523 862.381   -0.000   -0     0 17.100700 -0.000000 34 50020800 PLUMBERS, PIPEFITTERS AND APPR
 71  79.108   -0.000 1216     0 -0.000000 -0.000000 51 10100350 PODIATRISTS
964 375.000   -0.000   -0     0 17.200200 -0.000000 30 70100250 POLICE AND DETECTIVES
 92  51.088   -0.000 2207     0 -0.000000 -0.000000 51 10100100 POLITICAL SCIENTISTS
381 232.368   -0.000   -0     0 14.040300 -0.000000 20 40061050 POSTAL CLERKS
224 188.168   -0.000   -0     0 14.040300 -0.000000 20 20040300 POSTMASTERS AND MAIL SUPER
525 952.000   -0.000   -0     0 17.320000 -0.000000 20 50120200 POWER STATION OPERATORS
926 354.878   -0.000   -0     0  7.030200 -0.000000 21 70060300 PRACTICAL NURSES
143  92.228   -0.000  823     0 -0.000000 -0.000000 40 10201050 PRESCHOOL, KINDERGARTEN
530 651.000   -0.000   -0     0 17.190200 -0.000000 30 50100300 PRINTING PRESS OPRS AND APPR
531 651.000   -0.000   -0     0 17.190200 -0.000000 30 50100300 PRINTING PRESS OPRS AND APPR
  0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0 50100000 PRINTING TRADE CRAFTS WRKRS
980 307.878   -0.000   -0     0  9.020100 -0.000000 20 70120000 PRIVATE HOUSEHOLD WORKERS
984 301.000  309.000   -0     0 -0.000000 -0.000000 99 70120250 PRIV HOUSEHOLD CLEANRS, SERVAN
629  -0.000   -0.000   -0     0  4.000000 -0.000000 20 61060250 PROD GRDR,PACKR,EXC FACT,FARM
  0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0 10000000 PROFESSIONAL, TECHNICAL, KIND
362 209.688   -0.000   -0     0 14.039900 -0.000000 20 40061100 PROOFREADERS
  0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0 70100000 PROTECTIVE AND SERVICE WORKERS
 93  45.088   -0.000 2001     0 -0.000000 -0.000000 51 10100150 PSYCHOLOGISTS
192 165.068   -0.000   -0     0 -0.000000 -0.000000 40 10220500 PUBLIC RELATIONS SPECIALIST
656 615.000   -0.000   -0     0 17.230300 -0.000000 30 61020400 PUNCH STAMPING PRESS OPERATIV
229 162.158   -0.000   -0     0  4.990000 -0.000000 31 20020250 PURCHASING AGENTS, BUYERS NEC
 83  78.368   -0.000 5207     0 -0.000000 -0.000000 31 10120200 RADIOLOGIC TECHNOL,TECH
171 193.282   -0.000   -0     0 -0.000000 -0.000000 -0 10140250 RADIO OPERATORS
485 720.281   -0.000   -0     0 17.150300 -0.000000 30 50080650 RADIO, TELEVISION REPAIRERS
193 159.148   -0.000  603     0 -0.000000 -0.000000 21 10220550 RADIO, TV ANNOUNCERS
712 910.884   -0.000   -0     0 -0.000000 -0.000000 30 62000400 RAILROAD BRAKE OPERATORS
226 198.168   -0.000   -0     0 -0.000000 -0.000000 99 20060300 RAILROAD CONDUCTORS
713 910.887   -0.000   -0     0 -0.000000 -0.000000 99 62000450 RAILROAD SWITCH OPERATORS
406 622.000   -0.000   -0     0 -0.000000 -0.000000 99 50080700 RAILROAD, CAR SHOP REPAIRERS
710  -0.000   -0.000   -0     0 -0.000000 -0.000000 99 62000300 RAIL VEHICLE OPERATOR, NEC
270 250.358   -0.000   -0     0  4.170000 -0.000000 33 30000350 REAL ESTATE AGENTS, BROKERS
363 191.287   -0.000   -0     0  4.170000 -0.000000 30 40061150 REAL ESTATE APPRAISERS
230 187.168   -0.000   -0     0  9.020300 -0.000000 20 20060350 REATAURANT, CAFE, BAR MGRS
364 237.368   -0.000   -0     0 14.040000 -0.000000 20 40061200 RECEPTIONISTS
181 187.000  195.000 2103     0 -0.000000 -0.000000 30 10240750 RECREATION WORKERS
 75  75.000   -0.000 1203     0 -0.000000 -0.000000 30 10100400 REGISTERED NURSES
 90 129.000   -0.000 1910     0 -0.000000 -0.000000 40 10240250 RELIGIOUS WKRS, EXC CLERGY
195  -0.000   -0.000   -0     0 -0.000000 -0.000000 99 10240800 RESEARCH WORKERS, NEC
660  -0.000   -0.000   -0     0 -0.000000 -0.000000 99 61001250 RIVETERS AND FASTENERS
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533 613.000   -0.000   -0      0 17.239900 -0.000000 30 50060600 ROLLERS AND FINISHERS, METAL
534 866.381   -0.000   -0      0 17.101000 -0.000000 30 50020900 ROOFER AND SLATERS
661 911.000   -0.000   -0      0 17.000100 -0.000000 20 61001200 SAILORS AND DECKHANDS
222  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 20020350 SALES MANAGER, EXC RET TRADE
221 163.118   -0.000   -0      0  4.120000 -0.000000 40 20020300 SALES MANAGER, RETIAL TRADE
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 30000000 SALES WORKERS
 -1  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 30000450 SALES WORKERS, NEC
662 667.000   -0.000   -0      0 17.369900 -0.000000 20 61001250 SAWYERS
240  91.000   92.000  027      0 -0.000000 -0.000000 51 20040400 SCHOOL ADMIN, ELEMN, SECOND
952  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 70000650 SCHOOL MONITORS
235  90.000   -0.000  027      0 -0.000000 -0.000000 51 20040350 SCHOOL ADMIN, COLLEGE
144  91.228   -0.000  003      0 -0.000000 -0.000000 40 10201150 SECONDARY SCHOOL TEACHERS
370 201.368   -0.000   -0      0 14.070200 -0.000000 30 40020050 SECRETARIES, LEGAL
371 201.368   -0.000   -0      0 14.070200 -0.000000 30 40020100 SECRETARIES, MEDICAL
372 201.000   -0.000   -0      0 14.070200 -0.000000 30 40020150 SECRETARIES, OTHER
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 61020000 SEMISKILLED METALWORKING
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 61060000 SEMISKILLED PACKING, INSPECT
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 61040000 SEMISKILLED TEXTILE
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 70000000 SERVICE WORKERS
663 786.000  787.000   -0      0 17.339900 -0.000000 30 61001300 SEWERS AND STITCHERS
535 804.281   -0.000   -0      0 17.230500 -0.000000 30 50060650 SHEETMETAL WORKERS AND APPR
536 804.281   -0.000   -0      0 17.230500 -0.000000 30 50060650 SHEETMETAL WORKERS AND APPR
965 377.868   -0.000   -0      0 17.200200 -0.000000 30 70100300 SHERIFFS AND BAILIFFS
540 806.381   -0.000   -0      0 -0.000000 -0.000000 99 50140850 SHIPFITTERS
374 222.387   -0.000   -0      0 14.050300 -0.000000 21 40061250 SHIPPING, RECEIVING CLERKS
664 690.000  700.000   -0      0 17.340100 -0.000000 20 61001350 SHOEMAKING MACHINE OPERATIVES
542 365.381   -0.000   -0      0 17.340200 -0.000000 34 50140900 SHOE REPAIRERS
543 970.381   -0.000   -0      0 17.070000 -0.000000 30 50140950 SIGN PAINTERS AND LETTERERS
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 10100000 SOCIAL SCIENTISTS
186 195.108   -0.000 2104      0 -0.000000 -0.000000 40 10240000 SOCIAL WORKERS
 94  54.088   -0.000 2200      0 -0.000000 -0.000000 51 10100200 SOCIOLOGISTS
665 814.000   -0.000   -0      0 17.230604 -0.000000 34 61020450 SOLDERERS
672 682.000   -0.000   -0      0 17.339900 -0.000000 20 61040150 SPINNERS, TWISTERS, WINDERS
545 950.782   -0.000   -0      0 17.320000 -0.000000 30 50141000 STATIONARY ENGINEERS
375 219.388   -0.000   -0      0 14.030300 -0.000000 20 40061300 STATISTICAL CLERKS
 36  20.108   -0.000 1702      0 -0.000000 -0.000000 40 10060150 STATISTICIANS
376 202.388   -0.000   -0      0 14.070300 -0.000000 30 40020200 STENOGRAPHERS
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 40020000 STENOGRAPHERS,TYPISTS,SECRE
271 251.000   -0.000   -0      0  4.040000 -0.000000 30 30000400 STOCK AND BOND SALES AGENTS
361 223.387   -0.000   -0      0 14.056400 -0.000000 20 40061350 STOCK CLERKS, STORE KEEPERS
762 922.887   -0.000   -0      0  4.260000 -0.000000 20 80000500 STOCK HANDLERS
546 771.281   -0.000   -0      0 -0.000000 -0.000000 99 50141050 STONE CUTTERS, STONE CARVERS
550 891.008  892.000   -0      0 17.109900 -0.000000 20 50020950 STRUCTURAL METAL CRAFT
161  18.008   -0.000 5309      0 -0.000000 -0.000000 30 10000400 SURVEYORS
605  18.000   -0.000   -0      0 -0.000000 -0.000000 30 61000250 SURVEYOR HELPERS
350 213.782   -0.000   -0      0 14.020201 -0.000000 20 40040300 TABULATING MACHINE OPERATORS
551 785.000   -0.000   -0      0 17.330200 -0.000000 30 50141100 TAILORS
714 913.463  913.883   -0      0  4.190000 -0.000000 20 62000500 TAXICAB DRIVERS, CHAUFFEURS
382  99.368   -0.000   -0      0 -0.000000 -0.000000 99 40061400 TEACHERS AIDES, EXC MONITORS
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 10200000 TEACHERS
145  -0.000   -0.000   -0      0 -0.000000 -0.000000 99 10201500 TEACHERS, NEC EXC COLL UNIVER
763 919.883   -0.000   -0      0 -0.000000 -0.000000 99 80000550 TEAMSTERS
  0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0 10160000 TECHNICIANS, EXC HEALTH
383 230.868   -0.000   -0      0 14.040500 -0.000000 20 40061450 TELEGRAPH MESSENGERS
384 203.588   -0.000   -0      0 14.090200 -0.000000 20 40061500 TELEGRAPH OPERATORS
552 822.000   -0.000   -0      0 17.150100 -0.000000 30 50120250 TELEPHONE INSTALLERS, REPAIRER
554 822.000  829.000   -0      0 17.140200 -0.000000 30 50120300 TELEPHONE LINE INSTALR, SPLICE
385 235.862   -0.000   -0      0 14.040100 -0.000000 20 40061550 TELEPHONE OPERATORS
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 76  79.370  -0.000 1212    0 -0.000000 -0.000000 40 10100450 THERAPISTS
 84 355.070  -0.000 5219    0 -0.000000 -0.000000 31 10120250 THERAPY ASSISTANTS
674  -0.000  -0.000   -0    0 -0.000000 -0.000000 99 61002503 THEB TEXTILE OPERATIVES
390 255.000 912.000   -0    0  4.190000 -0.000000 20 40061600 TICKET STATION,EXPRESS AGENTS
560 861.701  -0.000   -0    0 17.100400 -0.000000 34 50021000 TILESETTERS
761 940.000  -0.000   -0    0 -0.000000 -0.000000 99 80000450 TIMBERCUTTING, LOGGING WORKERS
561 601.000  -0.000   -0    0 17.230700 -0.000000 30 50060750 TOOL AND DIEMAKERS AND APPR
562 601.000  -0.000   -0    0 17.230700 -0.000000 30 50060750 TOOL AND DIEMAKERS AND APPR
172   0.107  -0.000   -0    0 16.011300 -0.000000 32 10140300 TOOL PROGRAMMERS, NUMERICAL
  0  -0.000  -0.000   -0   -0 -0.000000 -0.000000 -0        0 TOTAL,ALL OCCUPATIONS
  0  -0.000  -0.000   -0   -0 -0.000000 -0.000000 -0 50120000 TRANSPORTATION, PUB UTIL CRAFT
  0  -0.000  -0.000   -0   -0 -0.000000 -0.000000 -0 62000000 TRANSPORT EQUIPMENT OPERATIVES
715 904.003 905.003   -0    0 -0.000000 -0.000000 30 62000550 TRUCK DRIVERS
391 203.500  -0.000   -0    0 14.090200 -0.000000 20 40020250 TYPISTS
563 780.301  -0.000   -0    0 17.350000 -0.000000 30 50141150 UPHOLSTERERS
 95 199.160  -0.000  206    0 -0.000000 -0.000000 51 10100250 URBAN AND REGIONAL PLANNERS
953 344.070  -0.000   -0    0 -0.000000 -0.000000 99 70000700 USHERS, RECREACTION, AMUSEMENT
764 301.090 919.000   -0    0 -0.300000 -0.000000 99 80000600 VEHICLE WASHERS, EQUIP CLEANRS
 72  73.100  -0.000 1210    0 -0.000000 -0.000000 51 10100500 VETERINARIANS
174  45.100  -0.000  826  035 -0.000000 -0.000000 40 10240050 VOCATIONAL, ED COUNSELORS
911 311.070  -0.000   -0    0 17.290400 -0.000000 20 70040100 WAITERS ASSISTANTS
915 311.000  -0.000   -0    0 17.290400 -0.000000 30 70040300 WAITERS
770 922.007  -0.000   -0    0 -0.000000 -0.000000 99 80000650 WAREHOUSE LABORERS, NEC
673 603.702  -0.000   -0    0 17.337700 -0.000000 20 61040200 WEAVERS
392 224.407  -0.000   -0    0 14.059900 -0.000000 20 40061650 WEIGHERS
680 816.000 817.000   -0    0 17.230000 -0.000000 34 61020500 WELDERS AND FLAME CUTTERS
954 195.000  -0.000   -0    0 -0.000000 -0.000000 40 70000750 WELFARE SERVICE AIDES
601  -0.000  -0.000   -0    0 -0.000000 -0.000000 99 61001450 WINDING OPERATIVES, MFC
  0  -0.000  -0.000   -0   -0 -0.000000 -0.000000 -0 10220000 WRITERS, ARTISTS, ENTERTAIN
194  -0.000  -0.000   -0    0 -0.000000 -0.000000 -0 10220600 WRITERS, ARTISTS, ENT., NEC
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APPENDIX B

BLS FORECASTS OF REQUIREMENTS TO 1985 BY SOCIOECONOMIC GROUPS

BLS (D.O.T. - CENSUS) GROUPING: eighteen columns.

First Page

Cols. 1 and 2: Employment in 1974 and forecast for 1985 respectively.

Cols. 3 and 4: Change in the number employed between 1974 and 1985 and percentage change respectively.

Col. 5: Col. 3 divided by 11.

Col. 6: LSF = Labore force separations due to deaths, retirements and other changes, total 1974 to 1985 divided by 11.

Col. 7: Col. 5 plus Col. 6.

Col. 8: Census code.

Col. 9: See legend at top of each page for definition of letter A-F.

Second Page

Col. 1: Col. 6 (first page) developed by B.L.S.

Col. 2: Col. 3 (first page) plus Col. 1 (second page).

Col. 3: Each occupation Col. 2 in percent of total openings in Col. 2.

Col. 4: Total labor force in 1985 developed by B.L.S. multiplied by the percent distribution of employment in 1974 (not shown).

Col. 5: Col. 2 (first page) less Col. 4 (second page).

Col. 6: Col. 2 minus Col. 5.

Col. 7: Each occupation Col. 6 divided by the total in Col. 6.

Col. 8: Col. 7 divided by Col. 1 (first page).

Col. 9: Col. 8 divided by the average rate of change for all occupations in Col. 8 (48.55%).

[illegible] FORECAST, JOB OPENINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.30-.99	1.0-+	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
TOTAL,ALL OCCUPATIONS	1983438.0	2183117.0	199679.0	10.1	18153.0	82298.0	100451.0	0	
PROFESSIONAL, TECHNICAL, KIND	319766.0	368998.0	49232.0	15.4	4476.0	12982.0	17458.0	0	
ENGINEERS, TECHNICAL	31471.0	33644.0	2173.0	6.9	198.0	552.0	750.0	0	
ENGINEERS, AERO-ASTRONAUTIC	853.0	741.0	-112.0	-13.1	-10.0	9.0	-1.0	6	
ENGINEERS, CHEMICAL	1899.0	2038.0	139.0	7.3	13.0	27.0	40.0	10	S
ENGINEERS, CIVIL	3241.0	3460.0	219.0	6.8	20.0	78.0	98.0	11	S
ENGINEERS, ELECTRICAL	7973.0	8555.0	582.0	7.3	53.0	119.0	172.0	12	S
ENGINEERS, INDUSTRIAL	5177.0	5075.0	-102.0	-2.0	-9.0	84.0	75.0	13	
ENGINEERS, MECHANICAL	5894.0	6790.0	896.0	15.2	81.0	113.0	194.0	14	C
ENGINEERS, METALLURGICAL	424.0	422.0	-2.0	-.5	0.0	6.0	6.0	15	
ENGINEERS, MINING	9.0	12.0	3.0	33.3	0.0	0.0	1.0	20	
ENGINEERS, PETROLEUM	27.0	28.0	1.0	3.7	0.0	0.0	0.0	21	S
ENGINEERS, SALES	1443.0	1585.0	142.0	9.8	13.0	27.0	40.0	22	S
ENGINEERS, OTHER	4531.0	4943.0	412.0	9.1	37.0	87.0	125.0	23	S
LIFE AND PHYSICAL SCIENTISTS	7084.0	7411.0	327.0	4.6	30.0	165.0	195.0	0	
AGRICULTURAL SCIENTISTS	134.0	127.0	-7.0	-5.2	-1.0	4.0	4.0	42	
ATMOSPHERE, SPACE SCIENTISTS	56.0	95.0	39.0	69.6	4.0	1.0	5.0	43	F
BIOLOGICAL SCIENTISTS	1113.0	1079.0	-33.0	-3.0	-3.0	41.0	38.0	44	
CHEMISTS	5091.0	5342.0	251.0	4.9	23.0	110.0	133.0	45	S
GEOLOGISTS	80.0	118.0	38.0	47.5	3.0	1.0	4.0	51	A
MARINE SCIENTISTS	31.0	40.0	9.0	29.0	1.0	1.0	1.0	52	F
PHYSICISTS AND ASTRONOMERS	476.0	482.0	6.0	1.3	1.0	4.0	5.0	53	
LIFE, PHYSICAL SCIENTISTS NEC	113.0	137.0	24.0	21.2	2.0	3.0	5.0	54	A
MATHEMATICAL SPECIALISTS	1256.0	1562.0	306.0	24.4	28.0	45.0	72.0	0	
ACTUARIES	538.0	705.0	167.0	31.0	15.0	15.0	30.0	34	A
MATHEMATICIANS	166.0	220.0	54.0	32.5	5.0	4.0	9.0	35	A
STATISTICIANS	552.0	637.0	85.0	15.4	8.0	26.0	34.0	36	A
ENGINEERS, SCIENCE TECHNICIAN	26117.0	31018.0	4901.0	18.8	446.0	456.0	901.0	0	
AGRI, BIOLOG TECH EXC HEALTH	892.0	931.0	39.0	4.4	3.0	25.0	28.0	150	S
CHEMICAL TECHNICIANS	2957.0	3025.0	68.0	2.3	6.0	57.0	63.0	151	S
DRAFTERS	10111.0	12255.0	2144.0	21.2	195.0	153.0	348.0	152	F
ELECTRICAL, ELECTRONIC TECH	4367.0	4844.0	477.0	10.9	43.0	50.0	93.0	153	F
INDUSTRIAL ENGINEERING TECH	665.0	893.0	228.0	34.3	21.0	14.0	35.0	154	A
MATHEMATICAL TECHNICIANS	27.0	33.0	6.0	22.2	1.0	1.0	1.0	156	F
MECHANICAL ENGINEERING TECH	232.0	274.0	42.0	18.1	4.0	4.0	8.0	155	F
SURVEYORS	1041.0	1443.0	402.0	38.6	37.0	18.0	54.0	161	A
ENGINEERING, SCIENCE TECH NEC	5854.0	7350.0	1496.0	25.6	136.0	135.0	271.0	162	C
MEDICAL WORKERS, EXC TECH	42578.0	57106.0	14528.0	34.1	1321.0	2529.0	3849.0	0	
CHIROPRACTORS	272.0	376.0	[illegible]	38.2	9.0	15.0	25.0	61	A
DENTISTS	[illegible]	4767.0	[illegible]	57.3	158.0	200.0	359.0	62	D

PHILA. [illegible]
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATIOS GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
TOTAL, ALL OCCUPATIONS	935278.0	1134957.3	100.000996	2305296.0	-122181.0	982776.0	100.00	49.55	100.00	
PROFESSIONAL, TECHNICAL, KIND	142812.0	192234.0	17.379492	371655.6	-2657.6	189376.4	19.27	59.22	119.52	
ENGINEERS, TECHNICAL	6072.0	6251.0	.746643	36577.9	-2928.9	5321.1	.54	16.91	34.12	
ENGINEERS, AERO-ASTRONAUTIC	99.0	-13.0	-.001177	991.4	-255.4	-263.4	-.03	-30.88	-62.32	
ENGINEERS, CHEMICAL	297.0	435.0	.039459	2207.2	-169.2	266.8	.03	14.05	28.36	S
ENGINEERS, CIVIL	856.0	1077.0	.097471	3766.0	-306.9	770.1	.08	23.76	47.95	S
ENGINEERS, ELECTRICAL	1319.0	1891.0	.171143	9266.4	-711.6	1174.2	.12	14.79	29.85	S
ENGINEERS, INDUSTRIAL	924.0	822.0	.074393	6017.1	-942.1	-120.1	-.01	-2.32	-4.68	
ENGINEERS, MECHANICAL	1243.0	2139.0	.193584	6853.4	-60.4	2078.6	.21	35.27	71.17	C
ENGINEERS, METALLURGICAL	66.0	64.0	.005792	492.6	-70.8	-6.8	-.00	-1.60	-3.24	
ENGINEERS, MINING	6.0	3.0	.000272	10.5	1.5	4.5	.00	50.44	101.79	
ENGINEERS, PETROLEUM	0.0	1.0	.000091	31.4	-3.4	-2.4	-.00	-8.82	-17.80	S
ENGINEERS, SALES	297.0	439.0	.039731	1677.2	-92.2	346.8	.04	24.04	48.51	S
ENGINEERS, OTHER	357.0	1369.0	.123897	5266.3	-323.3	1045.7	.11	23.08	46.58	S
LIFE AND PHYSICAL SCIENTISTS	1815.0	2142.0	.193856	8233.5	-822.5	1319.5	.13	18.63	37.59	
AGRICULTURAL SCIENTISTS	44.0	37.0	.003349	155.7	-28.7	8.3	.00	6.16	12.43	
ATMOSPHERE, SPACE SCIENTISTS	11.0	50.0	.004525	65.1	29.9	79.9	.01	142.70	287.99	F
BIOLOGICAL SCIENTISTS	451.0	414.0	.037930	1282.0	-212.0	206.0	.02	18.68	37.69	
CHEMISTS	1210.0	1461.0	.132224	5917.1	-575.1	885.9	.09	17.40	35.12	S
GEOLOGISTS	11.0	49.0	.004435	93.0	25.0	74.0	.01	92.52	186.73	A
MARINE SCIENTISTS	11.0	20.0	.001810	36.0	4.0	24.0	.00	77.32	156.05	F
PHYSICISTS AND ASTRONOMERS	44.0	50.0	.004525	553.2	-71.2	-21.2	-.00	-4.46	-9.01	
LIFE, PHYSICAL SCIENTISTS NEC	33.0	57.0	.005159	131.3	5.7	62.7	.01	55.45	111.92	A
MATHEMATICAL SPECIALISTS	435.0	801.0	.072492	1493.3	102.2	903.2	.09	71.91	145.13	
ACTUARIES	165.0	332.0	.030047	625.3	79.7	411.7	.04	76.52	154.44	A
MATHEMATICIANS	44.0	98.0	.008869	192.9	27.1	125.1	.01	75.34	152.05	A
STATISTICIANS	266.0	371.0	.033576	641.6	-4.6	366.4	.04	66.38	133.97	A
ENGINEERS, SCIENCE TECHNICIAN	5316.0	9917.0	.897513	30355.1	662.9	10579.9	1.08	40.51	81.76	
AGRI. BIOLOG TECH EXC HEALTH	275.0	313.0	.028327	1003.1	-102.0	211.0	.02	24.44	49.33	S
CHEMICAL TECHNICIANS	627.0	695.0	.062899	3436.5	-411.8	283.2	.03	9.58	19.33	S
DRAFTERS	1683.0	3827.0	.346352	11751.3	503.2	4330.2	.44	42.83	86.43	F
ELECTRICAL, ELECTRONIC TECH	550.0	1027.0	.092946	5075.6	-231.6	795.4	.08	18.21	36.76	F
INDUSTRIAL ENGINEERING TECH	154.0	382.0	.034572	772.9	120.1	502.1	.05	75.50	152.39	A
MATHEMATICAL TECHNICIANS	11.0	17.0	.001539	31.4	1.6	18.6	.00	68.96	139.17	F
MECHANICAL ENGINEERING TECH	44.0	86.0	.007783	269.5	4.4	90.4	.01	38.95	78.60	F
SURVEYORS	130.0	600.0	.054301	1209.9	233.1	833.1	.08	80.03	161.51	A
ENGINEERING, SCIENCE TECH NEC	1485.0	2981.0	.269787	6804.0	546.0	3527.0	.36	60.25	121.59	C
MEDICAL WORKERS, EXC TECH	27019.0	42347.0	3.832495	49467.3	7619.7	49966.7	5.08	117.35	236.33	
CHIROPRACTORS	155.0	269.0	.024345	315.1	59.9	328.9	.03	120.90	244.01	A
DENTISTS	2299.0	3898.0	.355393	3543.5	1243.2	5141.2	.53	169.93	342.95	D

[illegible]

1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100

S / G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
DIETITIANS	752.0	881.0	129.0	17.2	12.0	49.0	61.0	74	A
OPTOMETRISTS	536.0	764.0	228.0	42.5	21.0	24.0	45.0	63	A
PHARMACISTS	4130.0	4498.0	378.0	9.4	34.0	192.0	226.0	64	
PHYSICIANS, MD OSTEOPATHS	10765.0	16621.0	5856.0	54.4	532.0	512.0	1044.0	65	E
PODIATRISTS	432.0	559.0	127.0	29.4	12.0	19.0	31.0	71	A
REGISTERED NURSES	19735.0	23854.0	4119.0	20.9	374.0	1350.0	1724.0	75	E
THERAPISTS	2635.0	4211.0	1576.0	59.8	143.0	157.0	300.0	76	C
VETERINARIANS	362.0	620.0	258.0	71.3	23.0	11.0	35.0	72	A
OTHER MEDICAL AND HEALTH WKR	10.0	25.0	15.0	150.0	1.0	1.0	1.0	73	F
HEALTH TECHNOL AND TECH	9635.0	14928.0	5333.0	55.2	482.0	734.0	1216.0	0	
CLINICAL LAB TECHNOL, TECH	4511.0	5678.0	1167.0	25.9	106.0	335.0	441.0	80	D
DENTAL HYGENISTS	452.0	1291.0	839.0	185.6	76.0	65.0	141.0	81	C
HEALTH RECORD TECHNOL, TECH	376.0	657.0	281.0	74.7	26.0	34.0	60.0	82	
RADIOLOGIC TECHNOL,TECH	2009.0	2484.0	475.0	23.6	43.0	154.0	197.0	83	C
THERAPY ASSISTANTS	67.0	133.0	66.0	98.5	6.0	4.0	10.0	84	A
OTHER HEALTH TECHNOL, TECH	2190.0	4665.0	2475.0	113.0	225.0	141.0	366.0	85	D
TECHNICIANS, EXC HEALTH	2671.0	3876.0	1205.0	45.1	110.0	65.0	175.0	0	
AIRPLANE PILOTS	730.0	892.0	162.0	22.2	15.0	8.0	22.0	163	F
AIR TRAFFIC CONTROLLERS	127.0	130.0	3.0	2.4	0.0	2.0	2.0	164	S
EMBALMERS	19.0	21.0	2.0	10.5	0.0	1.0	1.0	165	F
FLIGHT ENGINEERS	115.0	133.0	18.0	15.7	2.0	1.0	3.0	170	F
RADIO OPERATORS	720.0	786.0	66.0	9.2	6.0	22.0	28.0	171	S
TOOL PROGRAMMERS, NUMERICAL	81.0	108.0	27.0	33.3	2.0	2.0	4.0	172	A
OTHER TECHNICIANS EXC HEALTH	879.0	1806.0	927.0	105.5	84.0	30.0	119.0	173	C
COMPUTER SPECIALISTS	9999.0	12561.0	2562.0	25.6	233.0	214.0	447.0	0	
COMPUTER PROGRAMMERS	6458.0	7881.0	1423.0	22.0	129.0	159.0	288.0	3	C
COMPUTER SYSTEMS ANALYSTS	3183.0	4214.0	1031.0	32.4	94.0	50.0	144.0	4	C
OTHER COMPUTER SPECIALISTS	358.0	466.0	108.0	30.2	10.0	5.0	15.0	5	A
SOCIAL SCIENTISTS	4685.0	5259.0	574.0	12.3	52.0	117.0	169.0	0	
ECONOMISTS	2663.0	3158.0	495.0	18.6	45.0	63.0	108.0	91	F
POLITICAL SCIENTISTS	84.0	91.0	7.0	8.3	1.0	5.0	6.0	92	F
PSYCHOLOGISTS	1658.0	1697.0	39.0	2.4	4.0	40.0	44.0	93	S
SOCIOLOGISTS	11.0	18.0	7.0	63.6	1.0	0.0	1.0	94	F
URBAN AND REGIONAL PLANNERS	199.0	227.0	28.0	14.1	3.0	5.0	7.0	95	F
OTHER SOCIAL SCIENTISTS	70.0	68.0	-2.0	-2.9	0.0	3.0	3.0	96	
TEACHERS	83253.0	81307.0	-1946.0	-2.3	-172.0	4177.0	4005.0	0	
ADULT EDUCATION TEACHERS	885.0	1123.0	238.0	26.9	22.0	39.0	61.0	141	A
COLLEGE AND UNIVERSITY TEACHE	10858.0	9254.0	-1604.0	-14.8	-146.0	274.0	129.0	140	
ELEMENTARY SCHOOL TEACHERS	31327.0	32701.0	1374.0	4.4	125.0	2132.0	2257.0	102	S
PRESCHOOL, KINDERGARTEN	5389.0	5738.0	349.0	6.5	32.0	337.0	369.0	143	S
SECONDARY SCHOOL TEACHERS	28698.0	25465.0	-3233.0	-11.3	-308.0	1026.0	718.0	144	
TEACHERS, EXC COLL UNIVER	5886.0	7026.0	1140.0	19.4	134.0	368.0	472.0	145	D

PHILA. NOS [illegible], NOS GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 10

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OP-ENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
DIETITIANS	539.0	668.0	.060455	874.0	7.0	675.0	.07	89.76	181.14	A
OPTOMETRISTS	264.0	492.0	.044527	623.0	141.0	633.0	.06	118.13	238.35	A
PHARMACISTS	2112.0	2490.0	.225353	4664.0	-276.0	2214.0	.23	54.94	110.88	
PHYSICIANS, MD OSTEOPATHS	5632.0	11488.0	1.039569	12511.9	4109.1	15597.1	1.59	144.89	292.41	E
PODIATRISTS	200.0	336.0	.030409	502.1	56.9	392.9	.04	90.95	183.55	A
REGISTERED NURSES	14350.0	18969.0	1.716735	22937.5	916.5	19885.5	2.02	100.76	203.36	E
THERAPISTS	1727.0	3303.0	.298929	3062.6	1148.4	4451.4	.45	168.93	340.94	C
VETERINARIANS	121.0	379.0	.034300	420.7	199.3	578.3	.06	159.74	322.38	A
OTHER MEDICAL AND HEALTH WKR	11.0	26.0	.002353	11.6	13.4	39.4	.03	393.77	794.70	F
HEALTH TECHNOL AND TECH	8774.0	13377.0	1.210647	11163.6	3744.4	17121.4	1.74	178.25	359.75	
CLINICAL LAB TECHNOL, TECH	3685.0	4852.0	.439116	5243.0	435.0	5287.0	.54	117.20	236.53	D
DENTAL HYGENISTS	715.0	1554.0	.140640	525.3	765.7	2319.7	.24	513.20	1035.72	C
HEALTH RECORD TECHNOL, TECH	374.0	655.0	.059279	437.0	220.0	875.0	.09	232.71	469.64	
RADIOLOGIC TECHNOL,TECH	1694.0	2169.0	.196299	2335.0	149.0	2318.0	.24	115.39	232.86	C
THERAPY ASSISTANTS	44.0	110.0	.009955	77.9	55.1	165.1	.02	246.46	497.39	A
OTHER HEALTH TECHNOL, TECH	1551.0	4026.0	.364362	2545.4	2119.6	6145.6	.63	280.62	566.34	D
TECHNICIANS, EXC HEALTH	715.0	1920.0	.173764	3104.4	771.6	2691.6	.27	100.77	203.37	
AIRPLANE PILOTS	38.5	250.0	.022626	948.5	43.5	293.5	.03	40.21	81.15	F
AIR TRAFFIC CONTROLLERS	22.0	25.0	.002263	147.6	-17.6	7.4	.00	5.82	11.75	S
EMBALMERS	11.0	13.0	.001177	22.1	-1.1	11.9	.00	62.72	126.58	F
FLIGHT ENGINEERS	11.0	29.0	.002625	133.7	-.7	28.3	.00	24.64	49.73	F
RADIO OPERATORS	242.0	308.0	.027875	836.9	-50.8	257.2	.03	35.72	72.08	S
TOOL PROGRAMMERS, NUMERICAL	22.0	49.0	.004435	94.1	13.9	62.9	.01	77.60	156.61	A
OTHER TECHNICIANS EXC HEALTH	330.0	1257.0	.113761	1021.5	784.4	2041.4	.21	232.24	468.69	C
COMPUTER SPECIALISTS	2354.0	4916.0	.444909	41621.6	939.4	5855.4	.60	58.56	118.18	
COMPUTER PROGRAMMERS	1744.0	3172.0	.287073	7506.0	375.0	3547.0	.36	54.92	110.85	C
COMPUTER SYSTEMS ANALYSTS	550.0	1581.0	.143084	3699.5	514.5	2095.5	.21	65.83	132.86	C
OTHER COMPUTER SPECIALISTS	55.0	163.0	.014752	416.1	49.9	212.9	.02	59.47	120.02	A
SOCIAL SCIENTISTS	1267.0	1861.0	.168425	5445.3	-186.3	1674.7	.17	35.75	72.14	
ECONOMISTS	693.0	1188.0	.107517	3095.1	62.9	1250.9	.13	46.97	94.80	F
POLITICAL SCIENTISTS	55.0	62.0	.005611	97.6	-6.6	55.4	.01	65.92	133.03	F
PSYCHOLOGISTS	440.0	479.0	.043351	1927.0	-230.0	249.0	.03	15.02	30.30	S
SOCIOLOGISTS	0.0	7.0	.000634	12.8	5.2	12.2	.00	111.05	224.11	F
URBAN AND REGIONAL PLANNERS	55.0	83.0	.007512	231.8	-4.3	78.7	.01	39.55	79.82	F
OTHER SOCIAL SCIENTISTS	33.0	31.0	.002806	81.4	-13.4	17.6	.00	25.20	50.86	
TEACHERS	45947.0	44051.0	3.986711	96724.7	-15397.7	28653.3	2.92	34.44	69.50	
ADULT EDUCATION TEACHERS	429.0	667.0	.060365	1028.6	94.4	761.4	.08	86.03	173.63	A
COLLEGE AND UNIVERSITY TEACHE	3314.0	1410.0	.127605	12620.0	-3366.0	-1956.0	-.20	-18.01	-36.36	
ELEMENTARY SCHOOL TEACHERS	23452.0	24826.0	2.246837	36410.5	-3709.6	21116.4	2.15	67.41	136.04	S
PRESCHOOL, KINDERGARTEN	5717.0	4056.0	.367077	6263.5	-525.5	3530.5	.36	65.51	132.22	S
SECONDARY SCHOOL TEACHERS	10356.0	7893.0	.714334	33540.0	-8075.9	-182.9	-.02	-.63	-1.28	
TEACHERS, NEC EXC COLL UNIVER	4046.0	5188.0	.469525	6841.1	184.9	5372.9	.55	91.28	184.22	D

[illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0-+	ALL OTHER G>T<100

S
G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
WRITERS, ARTISTS, ENTERTAIN	29079.0	34944.0	5865.0	20.2	533.0	1113.0	1646.0	0	
ACTORS	115.0	167.0	52.0	45.2	5.0	3.0	8.0	175	A
ATHLETES AND KINDRED WORKERS	1429.0	2059.0	630.0	44.1	57.0	57.0	115.0	180	B
AUTHORS	1259.0	1296.0	37.0	2.9	3.0	54.0	57.0	181	S
DANCERS	113.0	147.0	34.0	30.1	3.0	11.0	14.0	182	A
DESIGNERS	3947.0	4365.0	418.0	10.6	38.0	107.0	145.0	183	F
EDITORS AND REPORTERS	3985.0	4872.0	887.0	22.3	81.0	168.0	249.0	184	C
MUSCIANS AND COMPOSERS	3102.0	3613.0	511.0	16.5	46.0	138.0	184.0	185	F
PAINTERS AND SCULPTORS	7958.0	9569.0	1611.0	20.2	146.0	341.0	488.0	190	D
PHOTOGRAPHERS	1901.0	2107.0	206.0	10.8	19.0	49.0	67.0	191	F
PUBLIC RELATIONS SPECIALIST	2332.0	2626.0	294.0	12.6	27.0	85.0	112.0	192	F
RADIO, TV ANNOUNCERS	244.0	243.0	-1.0	-.4	0.0	2.0	2.0	193	
WRITERS, ARTISTS, ENT., NEC	2694.0	3880.0	1186.0	44.0	108.0	97.0	205.0	194	C
OTHER PROFESSIONAL,TECHNICAL	72018.0	85397.0	13379.0	18.6	1216.0	2817.0	4034.0	0	
ACCOUNTANTS	21574.0	21906.0	332.0	1.5	30.0	635.0	665.0	1	S
ARCHITECTS	2395.0	3198.0	803.0	33.5	73.0	71.0	144.0	2	C
ARCHIVISTS AND CURATORS	169.0	227.0	58.0	34.3	5.0	9.0	14.0	33	A
CLERGY	4005.0	4302.0	297.0	7.4	27.0	157.0	84.0	86	S
RELIGIOUS WKRS, EXC CLERGY	978.0	1054.0	76.0	7.8	7.0	59.0	66.0	90	
FARM MANAGEMENT ADVISORS	14.0	10.0	-4.0	-28.5	0.0	0.0	0.0	24	
FORESTERS, CONSERVATIONISTS	154.0	206.0	52.0	33.8	5.0	3.0	8.0	25	A
HOME MANAGEMENT ADVISORS	29.0	21.0	-8.0	-27.6	-1.0	1.0	1.0	26	
JUDGES	172.0	175.0	3.0	1.7	0.0	15.0	15.0	30	
LAWYERS	8446.0	11945.0	3499.0	41.4	318.0	415.0	733.0	31	E
LIBRARIANS	4706.0	5329.0	623.0	13.2	57.0	288.0	345.0	32	
OPERATIONS, SYSTEMS RESEARCH	3121.0	4562.0	1441.0	46.2	131.0	53.0	184.0	55	
PERSONNEL LABOR RELATIONS	9893.0	11072.0	1179.0	12.0	98.0	272.0	370.0	56	F
RESEARCH WORKERS, NEC	4051.0	5578.0	1527.0	37.7	139.0	119.0	258.0	195	
RECREATION WORKERS	2284.0	2779.0	495.0	21.7	45.0	95.0	140.0	101	B
SOCIAL WORKERS	8861.0	9787.0	926.0	10.5	84.0	475.0	559.0	100	D
VOCATIONAL, ED COUNSELORS	3066.0	5248.0	2182.0	71.2	198.0	149.0	348.0	174	D
MANAGERS, OFFICIALS, PROPRIET	197058.0	215903.0	18845.0	9.5	1713.0	6487.0	8200.0	0	
BUYERS, SALES, LOAN MANAGERS	38589.0	47602.0	9013.0	23.4	819.0	1192.0	2012.0	0	
BANK, FINANCIAL MANAGERS	10469.0	13759.0	3290.0	31.4	299.0	359.0	659.0	202	D
CREDIT MANAGERS	1595.0	1915.0	320.0	20.1	29.0	53.0	82.0	210	B
BUYERS, SHIPPERS, FARM PRODUCT	33.0	39.0	6.0	18.2	1.0	1.0	2.0	203	F
BUYERS, WHOLESALE, RETAIL	4796.0	6149.0	1353.0	28.2	123.0	225.0	349.0	205	C
PURCHASING AGENTS, BUYERS NEC	5515.0	6338.0	823.	14.9	75.0	146.0	221.0	225	
SALES MANAGER, RETAIL TRADE	7476.0	9024.0	1548.0	20.7	141.0	225.0	365.0	231	C
SALES MANAGER, EXC RET TRADE	8705.0	10378.0	1673.0	19.2	152.0	183.0	335.0	233	F
ADMIN, PUBLIC, PUB INSPECTORS	[illegible]	17665.0	[illegible]	12.7	211.0	723.0	934.0	0	
ASSESS., CONTROL., LOC PUB ADMI	401.0	374.0	-27.0	-6.7	-2.0	24.0	22.0	201	

PHILA. BLS FORECAST, OCC GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0-+	ALL OTHER G>100

S
G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
WRITERS, ARTISTS, ENTERTAIN	12243.0	18138.0	1.638813	33737.8	1146.2	19254.2	1.96	66.21	133.63	
ACTORS	33.0	95.0	.007693	133.7	33.3	128.3	.01	102.98	207.68	A
ATHLETES AND KINDRED WORKERS	627.0	1257.0	.113761	1663.9	398.1	1655.1	.17	115.82	233.75	B
AUTHORS	594.0	631.0	.057107	1463.3	-167.3	463.7	.05	36.83	74.33	S
DANCERS	121.0	155.0	.014028	131.3	15.7	170.7	.02	151.03	304.80	A
DESIGNERS	1177.0	1595.0	.144351	4587.5	-222.5	1372.5	.14	34.77	70.18	F
EDITORS AND REPORTERS	1040.0	2735.0	.247523	4631.7	240.3	2975.3	.30	74.66	150.68	C
MUSCIANS AND COMPOSERS	1518.0	2029.0	.183623	3635.4	7.6	2036.6	.21	65.66	132.50	F
PAINTERS AND SCULPTORS	3751.0	5362.0	.485273	9249.4	319.6	5681.6	.58	71.48	144.09	D
PHOTOGRAPHERS	539.0	745.0	.067424	2209.5	-102.5	642.5	.07	33.00	68.21	F
PUBLIC RELATIONS SPECIALIST	935.0	1229.0	.111227	2710.4	-84.4	1144.6	.12	49.08	99.05	F
RADIO, TV ANNOUNCERS	22.0	21.0	.001901	283.6	-40.6	-19.6	-.00	-8.03	-16.21	
WRITERS, ARTISTS, ENT., NEC	1067.0	2253.0	.203901	3131.2	748.8	3001.8	.31	111.43	224.88	C
OTHER PROFESSIONAL,TECHNICAL	33347.0	44366.0	4.015219	83704.6	1692.4	46058.4	4.69	63.95	129.07	
ACCOUNTANTS	6905.0	7315.0	.662023	23312.5	-3008.6	4306.4	.44	20.93	42.24	S
ARCHITECTS	781.0	1584.0	.143355	2783.6	414.4	1998.4	.20	83.44	168.39	C
ARCHIVISTS AND CURATORS	99.0	157.0	.014209	196.4	30.6	187.6	.02	110.99	224.00	A
CLERGY	1727.0	2024.0	.183176	4654.9	-352.9	1671.1	.17	41.73	84.21	S
RELIGIOUS WKRS, EXC CLERGY	549.0	725.0	.065614	1135.7	-82.7	642.3	.07	65.67	132.54	
FARM MANAGEMENT ADVISORS	.0	-4.0	-.000362	16.1	-6.3	-10.3	-.00	-73.37	-148.07	
FORESTERS, CONSERVATIONISTS	33.0	85.0	.007693	179.6	27.0	112.0	.01	72.73	146.79	A
HOME MANAGEMENT ADVISORS	11.0	3.0	.000272	33.7	-12.7	-9.7	-.00	-33.47	-67.55	
JUDGES	165.0	168.0	.015204	193.8	-24.9	143.1	.01	83.19	167.89	
LAWYERS	4565.0	8064.0	.729839	9816.6	2128.4	10192.4	1.04	120.60	243.55	E
LIBRARIANS	3163.0	3791.0	.343094	5469.7	-140.7	3650.3	.37	77.57	156.54	
OPERATIONS, SYSTEMS RESEARCH	583.0	2024.0	.183176	3627.5	934.5	2958.5	.30	94.79	191.31	
PERSONNEL LABOR RELATIONS	2332.0	4071.0	.368434	10452.3	-380.3	3690.7	.38	41.04	82.82	F
RESEARCH WORKERS, NEC	1339.0	2836.0	.256664	4708.4	869.6	3705.6	.38	91.47	184.61	
RECREATION WORKERS	1045.0	1540.0	.139373	2654.6	124.4	1664.4	.17	72.07	147.06	B
SOCIAL WORKERS	5225.0	6151.0	.556679	10298.9	-511.9	5639.1	.57	63.64	128.43	D
VOCATIONAL, ED COUNSELORS	1639.0	3821.0	.345809	3563.5	1684.5	5505.5	.56	179.57	362.39	D
MANAGERS, OFFICIALS, PROPRIET	71357.0	90202.0	8.163476	229035.3	-13132.3	77069.7	7.84	39.11	78.93	
BUYERS, SALES, LOAN MANAGERS	13112.0	22125.0	2.002360	44851.0	2751.0	24876.0	2.53	64.46	130.13	
BANK, FINANCIAL MANAGERS	3949.0	7239.0	.655145	12167.0	1591.2	8830.2	.90	84.35	170.22	D
CREDIT MANAGERS	593.0	903.0	.081723	1453.4	61.2	964.2	.10	60.45	122.00	B
BUYERS, SHIPPERS, FARM PRODUC	11.0	17.0	.001539	38.4	.6	17.6	.00	53.47	107.91	F
BUYERS, WHOLESALE, RETAIL	2475.0	3828.0	.346442	5574.3	574.7	4402.7	.45	91.80	185.27	C
PURCHASING AGENTS, BUYERS NEC	1630.0	2429.0	.219835	6489.3	-71.9	2357.1	.24	42.74	86.25	
SALES MANAGER, RETIAL TRADE	2475.0	4023.0	.364092	8689.2	334.8	4357.8	.44	58.29	117.64	C
SALES MANAGER, EXC RET TRADE	2313.0	3686.0	.333591	10117.6	260.4	3946.4	.40	45.33	91.49	F
ADMINISTRATORS, PUB INSPECTOR	[illegible]	13277.0	1.201631	21247.5	-642.5	12634.5	.98	52.70	106.36	
ASSESS, CONTROL, LOC PUB ADMI	204.0	237.0	.021449	466.1	-92.1	144.9	.01	36.14	72.94	

[illegible] TITLES GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>74/100

3
G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	1985	CHANGE FROM 74 TO 85 NOS.	PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
CONSTRUCTION INSPECTOR, PUB	373.0	404.0	31.0	8.3	3.0	23.0	26.0	213	
HEALTH ADMINISTRATORS	3195.0	3978.0	783.0	24.5	71.0	143.0	214.0	212	C
INSPECTORS, EXC CONSTRUCT PUB	2574.0	3002.0	428.0	16.6	39.0	87.0	126.0	215	B
OFFICIALS, ADMINS, PUB	5333.0	5215.0	-118.0	-2.2	-11.0	204.0	193.0	222	
POSTMASTERS AND MAIL SUPER	402.0	297.0	-105.0	-26.1	-10.0	14.0	5.0	224	
SCHOOL ADMIN, COLLEGE	1294.0	1531.0	237.0	18.3	22.0	55.0	77.0	235	A
SCHOOL ADMIN, ELEM, SECOND	4709.0	5804.0	1095.0	23.3	100.0	173.0	273.0	240	C
OTHER MANAGERS, OFFICIALS, PR	140158.0	147696.0	7538.0	5.4	683.0	4572.0	5255.0	0	
FUNERAL DIRECTORS	911.0	898.0	-13.0	-1.4	-1.0	36.0	35.0	211	
MGRS, SUPERINTENDENTS, BLDG	1798.0	2395.0	597.0	33.2	54.0	120.0	174.0	216	C
OFFICE MANAGERS, NEC	7611.0	9799.0	2188.0	28.7	199.0	293.0	492.0	220	D
OFFICERS, PILOTS, PURSERS, SH	572.0	609.0	37.0	6.5	3.0	15.0	19.0	221	E
OFFICIALS OF LODGES, UNIONS	1348.0	1336.0	-12.0	-.9	-1.0	49.0	48.0	223	
RAILROAD CONDUCTORS	1195.0	1347.0	152.0	12.7	14.0	33.0	46.0	226	F
RESTAURANT, CAFE, BAR MGRS	13775.0	13870.0	95.0	.7	9.0	376.0	385.0	230	E
OTHER MGRS, ADMINISTRATORS	115978.0	120442.0	4464.0	3.8	406.0	3649.0	4055.0	245	3
SALES WORKERS	140617.0	153415.0	12798.0	9.1	1163.0	5987.0	7150.0	0	
ADVERTISING AGENTS, SALES WKR	2053.0	2573.0	520.0	25.3	47.0	76.0	123.0	260	B
AUCTIONEERS	75.0	74.0	-1.0	-1.3	0.0	4.0	4.0	261	C
DEMONSTRATORS	879.0	1163.0	284.0	32.3	26.0	59.0	85.0	262	F
HUCKSTERS AND PEDDLERS	2540.0	3054.0	514.0	20.2	47.0	141.0	188.0	264	
INSURANCE AGENTS, BROKERS, ET	11507.0	13051.0	1544.0	13.4	140.0	323.0	463.0	265	C
NEWSPAPER CARRIER AND VENDOR	1639.0	1360.0	-279.0	-17.0	-25.0	25.0	0.0	266	
REAL ESTATE AGENTS, BROKERS	7137.0	7967.0	830.0	11.6	75.0	345.0	423.0	270	
STOCK AND BOND SALES AGENTS	3140.0	3387.0	247.0	7.9	22.0	116.0	139.0	271	E
SALES WORKERS, NEC	111647.0	114786.0	3139.0	2.8	831.0	4897.0	5728.0	-1	E
CLERICAL WORKERS	410095.0	486257.0	76162.0	18.6	6924.0	24649.0	31573.0	0	
STENOGRAPHERS, TYPISTS, SECRE	125862.0	160265.0	34403.0	27.3	3128.0	10241.0	13369.0	0	
SECRETARIES, LEGAL	4361.0	7423.0	3062.0	70.2	278.0	466.0	744.0	370	E
SECRETARIES, MEDICAL	3640.0	5846.0	2206.0	60.7	201.0	367.0	568.0	371	F
SECRETARIES, OTHER	80475.0	105783.0	25308.0	31.4	2301.0	6596.0	8896.0	372	E
STENOGRAPHERS	2127.0	1337.0	-790.0	-37.1	-72.0	126.0	54.0	376	
TYPISTS	35259.0	39874.0	4615.0	13.1	420.0	2686.0	3105.0	391	
OFFICE MACHINE OPERATORS	20428.0	19372.0	-1056.0	-5.2	-96.0	889.0	793.0	0	
BOOKKEEPING, BILLING OPERA	1355.0	1295.0	-60.0	-4.4	-5.0	75.0	70.0	341	
CALCULATING MACHINE OPERATOR	977.0	1010.0	33.0	3.4	3.0	61.0	64.0	342	
COMPUTER, PERIPHERAL EQUIP	7788.0	8959.0	1171.0	15.1	106.0	160.0	267.0	343	F
DUPLICATING MACHINE OPERATOR	735.0	766.0	31.0	4.2	3.0	36.0	39.0	344	3
KEYPUNCH OPERATORS	7632.0	5299.0	-2333.0	-30.6	-212.0	450.0	239.0	345	
TABULATING MACHINE OPERATORS	99.0	69.0	-30.0	-30.3	-3.0	3.0	0.0	350	
OTHER OFFICE MACHINE OPERATOR	2382.0	2554.0	172.0	7.2	12.0	104.0	116.0	355	
OTHER CLERICAL WORKERS	268305.0	312620.0	44315.0	16.5	3892.0	13518.0	17411.0	0	

PHILA. BLS FORECAST. 3[illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G> T<100	S G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OP- ENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
CONSTRUCTION INSPECTOR, PUB	253.0	284.0	.025703	433.5	-29.5	254.5	.03	68.22	137.69	
HEALTH ADMINISTRATORS	1573.0	2356.0	.213223	3713.5	264.5	2620.5	.27	82.92	165.53	C
INSPECTORS, EXC CONSTRUCT PUB	957.0	1389.0	.125745	2991.7	10.3	1395.3	.14	54.21	109.40	B
OFFICIALS, ADMINS, PUB	2244.0	2126.0	.192409	6199.4	-983.4	1142.6	.12	21.42	43.24	
POSTMASTERS AND MAIL SUPER	154.0	49.0	.004435	467.2	-170.2	-121.2	-.01	-30.16	-60.86	
SCHOOL ADMIN, COLLEGE	605.0	842.0	.076203	1504.9	27.0	869.0	.09	67.16	135.53	A
SCHOOL ADMIN, ELEMN, SECOND	1903.0	2998.0	.271325	5473.1	330.9	3328.9	.34	70.69	142.67	C
OTHER MANAGERS, OFFICIALS, PR	59292.0	57802.0	5.231225	162936.8	-15240.8	42559.2	4.33	30.36	61.27	
FUNERAL DIRECTORS	386.0	383.0	.034662	1058.8	-160.8	222.2	.02	24.39	49.22	
MGRS, SUPERINTENDANTS, BLDG	1326.0	1917.0	.173493	2389.9	305.2	2222.2	.23	123.59	249.43	C
OFFICE MANAGERS, NEC	3222.0	5411.0	.489707	8846.1	952.9	6363.9	.65	83.61	168.75	D
OFFICERS, PILOTS, PURSERS, SH	155.0	202.0	.018281	664.8	-55.8	146.2	.01	25.56	51.58	S
OFFICIALS OF LODGES, UNIONS	539.0	527.0	.047695	1566.7	-230.7	296.3	.03	21.98	44.35	
RAILROAD CONDUCTORS	365.0	515.0	.046609	1388.9	-41.9	473.1	.05	39.59	79.90	F
RESTAURANT, CAFE, BAR MGRS	4136.0	4231.0	.382915	12523.5	-1653.5	2577.5	.26	23.92	48.28	S
OTHER MGRS, ADMINISTRATORS	40139.0	44603.0	4.036568	134798.2	-14356.2	30246.8	3.08	26.08	52.63	S
SALES WORKERS	65857.0	78655.0	7.118447	163435.5	-10020.5	68634.5	6.98	48.01	98.51	
ADVERTISING AGENTS, SALES WKR	936.0	1356.0	.122721	2386.1	186.9	1542.9	.16	75.15	151.67	B
AUCTIONEERS	44.0	43.0	.003892	37.2	-13.2	29.8	.00	39.77	80.27	C
DEMONSTRATORS	544.0	933.0	.084439	1321.6	141.4	1074.4	.11	122.23	246.67	F
HUCKSTERS AND PEDDLERS	1551.0	2065.0	.186887	2452.2	101.8	2166.8	.22	85.31	172.17	
INSURANCE AGENTS, BROKERS, ET	3553.0	5097.0	.461290	13374.3	-323.3	4773.7	.49	41.49	83.72	C
NEWSPAPER CARRIER AND VENDOR	275.0	-4.0	-.000362	1905.0	-545.0	-549.0	-.06	-33.49	-67.60	
REAL ESTATE AGENTS, BROKERS	3795.0	4625.0	.418572	8295.1	-328.1	4296.9	.44	60.21	121.58	
STOCK AND BOND SALES AGENTS	1275.0	1523.0	.137835	3649.5	-262.5	1260.5	.13	40.14	81.01	S
SALES WORKERS, NEC	53367.0	63336.0	5.732173	129764.4	-8978.4	54027.6	5.50	48.39	97.66	S
CLERICAL WORKERS	271139.0	347301.0	31.431491	471993.6	10263.4	357564.4	36.30	80.05	177.70	
STENOGRAPHERS,TYPISTS,SECRE	112651.0	147054.0	13.308705	146286.1	13978.9	161032.9	16.39	127.94	258.21	
SECRETARIES, LEGAL	5126.0	8188.0	.741032	5968.7	2354.3	10542.3	1.07	241.74	487.87	E
SECRETARIES, MEDICAL	4337.0	6245.0	.565186	4230.7	1617.3	7862.3	.80	216.00	435.92	F
SECRETARIES, OTHER	72556.0	97864.0	8.856903	93534.0	12249.0	110113.0	11.20	136.83	276.14	E
STENOGRAPHERS	1386.0	596.0	.053939	2472.2	-1135.2	-539.2	-.05	-25.35	-51.16	
TYPISTS	29546.0	34161.0	3.091644	40980.6	-1106.6	33054.4	3.36	93.75	189.20	
OFFICE MACHINE OPERATORS	3770.0	8723.0	.789452	23742.9	-4370.9	4352.1	.44	21.30	43.00	
BOOKKEEPING, BILLING OPERS	425.0	765.0	.069234	1586.5	-201.5	463.5	.05	35.42	71.49	
CALCULATING MACHINE OPERATOR	671.0	704.0	.063714	1135.5	-125.5	578.5	.06	59.21	119.49	
COMPUTER, PERIPHERAL EQUIP	1760.0	2931.0	.265262	9051.9	-92.8	2838.2	.29	36.44	73.55	
DUPLICATING MACHINE OPERATOR	346.0	427.0	.038644	854.3	-88.3	338.7	.03	46.09	93.01	S
KEYPUNCH OPERATORS	4950.0	2617.0	.236844	8870.5	-3571.5	-954.5	-.10	-12.51	-25.24	
TABULATING MACHINE OPERATORS	[illegible]	3.0	.000272	115.1	-46.1	-43.1	-.00	-43.50	-87.79	
OTHER OFFIC MACHINE OPERATOR	1144.0	1276.0	.115441	2129.3	-165.3	1110.7	.11	60.63	122.36	
OTHER CLERICAL WORKERS	148630.0	191513.0	17.332340	301364.5	655.5	192169.5	19.55	73.97	149.28	

[illegible] FORECAST, [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
BANK TELLERS	7810.0	9575.0	1765.0	22.6	160.0	507.0	667.0	301	D
BILLING CLERKS	4576.0	6048.0	1472.0	32.2	134.0	315.0	448.0	303	D
BOOKKEEPERS	38033.0	37890.0	-143.0	-.4	-13.0	2149.0	2136.0	305	
CASHIERS	26455.0	28822.0	2367.0	8.9	215.0	1545.0	1760.0	310	
CLERICAL SUPERVISORS, NEC	6138.0	7247.0	1109.0	18.1	101.0	245.0	346.0	312	C
COLLECTORS, BILL + ACCOUNT	1630.0	1866.0	236.0	14.5	21.0	71.0	92.0	313	B
COUNTER CLERKS, EXC FOOD	7685.0	8994.0	1309.0	17.0	113.0	453.0	572.0	314	D
DISPATCHER, STARTER, VEHICLE	2312.0	2682.0	370.0	16.0	34.0	66.0	100.0	315	F
ENUMERATORS + INTERVIEWERS	1411.0	1416.0	5.0	.4	0.0	68.0	69.0	320	
ESTIMATORS, INVESTIGATORS, NE	10535.0	12142.0	1607.0	15.3	146.0	434.0	580.0	321	D
EXPEDITORS, PROD CONTROLLERS	7337.0	7979.0	642.0	8.8	58.0	182.0	241.0	323	S
FILE CLERKS	9297.0	9205.0	-92.0	-1.0	-8.0	608.0	600.0	325	
INSURANCE ADJUST, EXAMINERS	3528.0	4185.0	657.0	18.6	63.0	115.0	174.0	326	
LIBRARY ATTENDANTS, ASSIST	3178.0	3842.0	664.0	20.9	60.0	224.0	284.0	330	C
MAIL CARRIERS, POST OFFICE	6163.0	5585.0	-578.0	-9.4	-53.0	94.0	42.0	331	C
MAIL HANDLER, EXC POST OFFICE	4648.0	5467.0	819.0	17.6	74.0	249.0	323.0	332	
MESSENGERS + OFFICE HELPERS	1485.0	1348.0	-137.0	-9.2	-12.0	72.0	59.0	333	C
METER READERS, UTILITIES	615.0	578.0	-37.0	-6.0	-3.0	10.0	7.0	334	
PAYROLL, TIME KEEPING CLERKS	5681.0	6167.0	486.0	8.6	44.0	293.0	337.0	360	
POSTAL CLERKS	8894.0	8067.0	-827.0	-9.3	-75.0	216.0	140.0	361	
PROOFREADERS	1256.0	1504.0	248.0	19.7	23.0	84.0	106.0	362	
REAL ESTATE APPRAISERS	610.0	712.0	102.0	16.7	9.0	29.0	38.0	363	B
RECEPTIONISTS	9509.0	12374.0	2865.0	30.1	260.0	778.0	1038.0	364	A
SHIPPING, RECEIVING CLERKS	14248.0	15561.0	1313.0	9.2	119.0	375.0	495.0	374	E
STATISTICAL CLERKS	9607.0	9534.0	-73.0	-.8	-7.0	481.0	475.0	375	S
STOCK CLERKS, STORE KEEPERS	13356.0	14241.0	885.0	6.6	80.0	418.0	499.0	381	S
TEACHERS AIDES, EXC MONITORS	4816.0	8795.0	3979.0	82.6	362.0	289.0	650.0	382	E
TELEGRAPH MESSENGERS	47.0	22.0	-25.0	-53.2	-2.0	1.0	-1.0	383	
TELEGRAPH OPERATORS	120.0	73.0	-47.0	-39.2	-4.0	4.0	0.0	384	
TELEPHONE OPERATORS	9782.0	8575.0	-1207.0	-12.3	-110.0	592.0	482.0	385	
TICKET STATION,EXPRESS AGENTS	1705.0	1560.0	-145.0	-8.5	-13.0	66.0	52.0	390	
WEIGHERS	1124.0	1188.0	64.0	5.7	6.0	31.0	37.0	392	S
MISC CLERICAL WORKERS,NEC	36214.0	59376.0	23162.0	64.0	2106.0	2457.0	4562.0	394,395	E
CRAFTS AND KINDRED WORKERS	265146.0	282712.0	17564.0	6.6	1597.0	6043.0	7640.0	0	
CONSTRUCTION CRAFTS WORKERS	73921.0	85479.0	11558.0	15.6	1051.0	1721.0	2772.0	0	
CARPENTERS AND APPRENTICES	20543.0	24063.0	3520.0	17.1	320.0	540.0	860.0	415,416	F
BRICK AND STONEMASONS AND APP	4573.0	5208.0	635.0	13.9	58.0	82.0	140.0	410,411	F
BULLDOZER OPERATORS	1064.0	1394.0	331.	31.1	30.0	21.0	51.0	412	A
CEMENT AND CONCRETE FINISHERS	2023.0	2478.0	455.0	22.5	41.0	39.0	81.0	421	B
ELECTRICIANS AND APPRENTICES	13328.0	15035.0	1707.0	12.8	155.0	254.0	409.0	430,431	F
EXCAVATING, GRADING, MACH OP	3722.0	4909.0	1137.0	31.9	108.0	71.0	179.0	436	C
FLOOR LAYERS, EXC TILE SETTER	491.0	499.0	8.0	1.6	1.0	9.0	9.0	440	S
PAINTERS AND APPRENTICES	9323.0	9654.0	331.0	3.6	30.0	265.0	295.0	510,511	
PAPERHANGERS	1078.0	1202.	124.0	11.5	11.0	57.0	69.0	512	
PLASTERERS AND APPRENTICES	726.0	609.0	-117.0	-16.1	-11.0	15.0	5.0	520,521	

PHIL.. BLS FORECAST, BLS GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
BANK TELLERS	5577.0	7342.0	.664467	9077.4	497.6	7839.0	.80	100.38	202.58	D
BILLING CLERKS	3465.0	4937.0	.445809	5314.6	729.4	5666.4	.58	[illegible]23.83	249.91	D
BOOKKEEPERS	23635.0	23495.0	2.126439	44204.9	-6314.8	17181.2	1.75	[illegible]5.17	91.17	
CASHIERS	[illegible]	19362.0	1.752303	30746.0	-1926.0	17436.0	1.77	[illegible]5.91	133.01	
CLERICAL SUPERVISORS, NEC	2695.0	3804.0	.344270	7134.0	113.0	3917.0	.40	63.81	128.79	C
COLLECTORS, BILL + ACCOUNT	751.0	1017.0	.092041	1094.5	-28.5	988.5	.10	60.64	122.39	B
COUNTER CLERKS, EXC FOOD	4953.0	6292.0	.569440	8932.1	61.9	6353.9	.65	82.68	166.86	D
DISPATCHER, STARTER, VEHICLE	726.0	1096.0	.099190	2687.2	-5.2	1090.8	.11	47.18	95.22	F
ENUMERATORS + INTERVIEWERS	748.0	753.0	.068148	1640.0	-224.0	529.0	.05	37.49	75.67	
ESTIMATORS, INVESTIGATORS, NE	4774.0	6381.0	.577494	12244.5	-102.6	6278.4	.64	59.60	120.27	D
EXPEDITORS, PROD CONTROLLERS	2032.0	2644.0	.239288	8527.6	-548.6	2095.4	.21	28.56	57.64	S
FILE CLERKS	6635.0	6596.0	.596952	10805.7	-1600.7	4995.3	.51	53.73	108.44	
INSURANCE ADJUST, EXAMINERS	1265.0	1922.0	.173945	4100.5	84.5	2006.5	.20	56.07	114.78	C
LIBRARY ATTENDANTS, ASSIST	2464.0	3128.0	.283091	3693.7	148.3	3276.3	.33	103.09	208.05	C
MAIL CARRIERS, POST OFFICE	1034.0	456.0	.041269	7163.1	-1578.1	-1122.1	-.11	-18.21	-36.74	
MAIL HANDLER, EXC POST OFFICE	2739.0	3558.0	.322007	5402.2	64.8	3622.8	.37	77.94	157.30	C
MESSENGERS + OFFICE HELPERS	792.0	655.0	.059279	1726.0	-378.0	277.0	.03	10.65	37.65	
METER READERS, UTILITIES	11[illegible].0	73.0	.006607	714.8	-136.8	-63.8	-.01	-10.37	-20.94	
PAYROLL, TIME KEEPING CLERKS	3223.0	3709.0	.335673	6602.9	-435.9	3273.1	.33	57.62	116.28	
POSTAL CLERKS	2376.0	1549.0	.140188	10337.3	-2270.3	-721.3	-.07	-8.11	-16.37	
PROOFREADERS	924.0	1172.0	.106069	145[illegible].5	44.2	1216.2	.12	96.83	195.42	B
REAL ESTATE APPRAISERS	319.0	421.0	.038101	709.[illegible]	3.0	424.0	.04	69.51	140.28	A
RECEPTIONISTS	8558.0	11423.0	1.033906	11352.1	1321.9	12744.9	1.30	134.03	270.49	E
SHIPPING, RECEIVING CLERKS	4125.0	5438.0	.492151	16560.1	-999.1	4438.9	.45	31.15	62.88	S
STATISTICAL CLERKS	5291.0	5218.0	.472240	11166.0	-1632.0	3586.0	.36	37.33	75.33	
STOCK CLERKS, STORE KEEPERS	4598.0	5483.0	.496223	15523.3	-1282.3	4200.7	.43	31.45	63.47	S
TEACHERS AIDES, EXC MONITORS	3179.0	7158.0	.647814	5597.5	3197.5	10355.5	1.05	215.02	433.95	E
TELEGRAPH MESSENGERS	11.0	-14.0	-.001267	54.6	-32.6	-46.6	-.00	-99.21	-200.21	
TELEGRAPH OPERATORS	44.0	-3.0	-.000272	139.5	-66.5	-69.5	-.01	-57.89	-116.84	
TELEPHONE OPERATORS	6512.0	5305.0	.480114	11369.4	-2794.4	2510.6	.26	25.67	51.80	
TICKET STATION,EXPRESS AGENTS	726.0	581.0	.052582	1981.7	-421.7	159.3	.02	9.34	18.86	
WEIGHERS	341.0	405.0	.036653	1306.4	-118.4	286.6	.03	25.50	51.46	S
MISC CLERICAL WORKERS,NEC	27[illegible]27.0	50189.0	4.542213	42090.6	17285.4	67474.4	6.87	186.32	376.03	E
CRAFTS AND KINDRED WORKERS	66472.0	84037.0	7.605531	338174.5	-25462.6	58574.4	5.96	22.09	44.58	
CONSTRUCTION CRAFTS WORKERS	19931.0	30489.0	2.759320	85916.4	-437.4	30051.6	3.06	40.65	82.05	
CARPENTERS AND APPRENTICES	5945.0	9460.0	.856150	23876.6	186.4	9646.4	.98	46.96	94.77	F
BRICK AND STONEMASONS AND APP	932.0	1537.0	.139152	5315.1	-107.1	1429.9	.15	31.27	63.11	F
BULLDOZER OPERATORS	231.0	561.0	.050772	1236.7	157.3	718.3	.07	67.51	136.25	A
CEMENT AND CONCRETE FINISHERS	423.0	884.0	.080004	2351.3	126.7	1010.7	.10	49.96	100.83	B
ELECTRICIANS AND APPRENTICES	2734.0	4501.0	.407350	15490.8	-455.8	4045.2	.41	30.35	61.25	F
EXCAVATING, GRADING, MACH OP	751.0	1968.0	.178106	4325.0	583.0	2551.0	.26	68.54	138.32	C
FLOOR LAYERS, EXC TILE SETTER	93.0	107.0	.009684	573.7	-71.7	35.3	.00	7.19	14.52	S
PAINTERS AND APPRENTICES	[illegible]	3245.0	.293772	10[illegible]35.3	-1181.9	2364.1	.21	22.14	44.68	S
PAPERHANGERS	437.0	751.0	.067967	1252.3	-50.9	700.1	.07	64.94	131.06	A
PLASTERERS AND APPRENTICES	153.0	48.0	.004344	343.4	-234.8	-186.8	-.02	-25.73	-51.93	

[illegible] BLS FORECAST, TITLES GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES: 1985 GREATER THAN 100						
PERCENT OF TARGET OPENINGS IN 1985						
A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G≥T<100	G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
PLUMBERS, PIPEFITTERS AND APP	11691.0	14172.0	2481.0	21.2	226.0	267.0	493.0	522,523	D
ROOFERS AND SLATERS	2654.0	3387.0	733.0	27.6	67.0	50.0	117.0	534	B
STRUCTURAL METAL CRAFT	1929.0	2105.0	176.0	9.1	16.0	36.0	52.0	550	S
TILESETTERS	776.0	764.0	-12.0	-1.5	-1.0	14.0	13.0	560	
BLUE COLLAR WRKS SUPVR NEC	35165.0	37423.0	2258.0	6.4	205.0	900.0	1105.0	441	S
METALWORKING CRAFT WRKRS, EXC	24621.0	24574.0	-47.0	-.2	-4.0	575.0	570.0	0	
BLACKSMITHS	146.0	85.0	-61.0	-41.8	-6.0	5.0	-1.0	403	
BOILERMAKERS	1740.0	2303.0	563.0	32.4	51.0	44.0	95.0	404	B
HEAT TREATERS, ANNEALERS ETC	636.0	482.0	-154.0	-24.2	-14.0	14.0	0.0	446	
FORGE AND HAMMER OPERATORS	425.0	411.0	-14.0	-3.3	-1.0	7.0	6.0	442	
JOB AND DIE SETTERS, METAL	1811.0	2111.0	300.0	16.6	27.0	31.0	58.0	454	F
MACHINIST AND APPRENTICES	9483.0	8958.0	-525.0	-5.5	-48.0	190.0	142.0	461,462	
MILLWRIGHTS	1977.0	2234.0	257.0	13.0	23.0	46.0	69.0	502	F
MOLDERS, METAL AND APPRENTICE	798.0	773.0	-25.0	-3.1	-2.0	15.0	12.0	503,504	
PATTERN AND MODEL MAKERS	1259.0	1109.0	-150.0	-11.9	-14.0	33.0	19.0	514	
ROLLERS AND FINISHERS, METAL	564.0	549.0	-15.0	-2.7	-1.0	12.0	11.0	533	
SHEETMETAL WORKERS AND APPR	4915.0	4463.0	-452.0	-9.2	-41.0	77.0	36.0	535,536	
TOOL AND DIEMAKERS AND APPR	4847.0	5076.0	229.0	4.7	21.0	100.0	121.0	561,562	S
MECHANICS, REPAIRERS, INSTAL	66076.0	73956.0	7880.0	11.9	716.0	1271.0	1987.0	0	
AIR COND, HEATING, REFRIG	6540.0	8123.0	1583.0	24.2	144.0	149.0	293.0	470	C
AIRCRAFT MECHANICS	1151.0	1129.0	-22.0	-1.9	-2.0	13.0	11.0	471	
AUTO ACCESSORIES INSTALLERS	143.0	126.0	-17.0	-11.9	-2.0	3.0	2.0	401	
AUTO BODY REPAIRERS	3119.0	3267.0	148.0	4.7	13.0	35.0	49.0	472	S
AUTO MECHANICS AND APPRENT	19810.0	22558.0	2748.0	13.9	250.0	347.0	597.0	473,474	F
DATA PROCESSING MACHINE REPAIR	1694.0	2565.0	871.0	51.4	79.0	13.0	93.0	475	B
FARM IMPLEMENT	421.0	562.0	141.0	33.5	13.0	14.0	27.0	480	A
HEAVY EQUIP MECH, INCL DIESEL	17141.0	17885.0	744.0	4.3	68.0	368.0	436.0	481	S
HOUSEHOLD APPLIANCE MECHAN	3562.0	3972.0	410.0	11.5	37.0	80.0	117.0	482	F
LOOM FIXERS	165.0	119.0	-46.0	-27.9	-4.0	5.0	1.0	483	
OFFICE MACHINE REPAIRERS	1846.0	2584.0	738.0	40.0	67.0	22.0	89.0	484	B
RADIO, TELEVISION REPAIRERS	2803.0	3445.0	642.0	22.9	58.0	57.0	115.0	485	B
RAILROAD, CAR SHOP REPAIRERS	790.0	714.0	-76.0	-9.6	-7.0	20.0	13.0	486	
OTHER MECHANICS AND APPREN	6845.0	6863.0	18.0	.3	2.0	143.0	145.0	495	S
PRINTING TRADE CRAFTS WRKRS	13240.0	12064.0	-1176.0	-8.9	-107.0	321.0	214.0	0	
BOOKBINDERS	1016.0	911.0	-105.0	-10.3	-10.0	43.0	34.0	405	
COMPOSITORS AND TYPESETTERS	5172.0	4151.0	-1021.0	-19.7	-93.0	137.0	44.0	422	
ELECTROTYPERS, STEREOTYPERS	[illegible]	55.0	-13.0	-17.5	-2.0	4.0	2.0	434	
ENGRAVERS, EXC PHOTOENGRAVERS	351.0	292.0	-59.0	-16.8	-5.0	12.0	6.0	435	
PHOTOENGRAVERS, LITHOGRAPHER	1159.0	1170.0	11.0	.9	1.0	25.0	26.0	515	S
PRINTING PRESS OPRS AND APPR	5439.0	5453.0	14.0	.3	1.0	100.0	101.0	530,531	S
TRANSPORTATION, PUB UTIL CRAF	11536.0	11319.0	-217.0	-1.9	-21.0	137.0	117.0	0	
ELEC PWR LINE INSTAL,REPRS	1331.0	1424.0	93.0	7.0	8.0	16.0	24.0	433	S

PHILA. [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0-+	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
PLUMBERS, PIPEFITTERS AND APP	2987.0	5418.0	.490341	13588.1	583.9	6001.9	.61	51.34	183.61	D
ROOFER AND SLATERS	550.0	1283.0	.116114	3084.7	302.3	1585.3	.16	59.73	121.55	B
STRUCTURAL METAL CRAFT	336.0	572.0	.051767	2242.0	-137.0	435.0	.04	22.55	45.51	G
TILESETTERS	154.0	142.0	.012851	301.4	-137.9	4.1	.00	.53	1.36	
BLUE COLLAR WRKS SUPVR NEC	3900.0	12158.0	1.100325	48871.4	-3448.4	8709.6	.89	24.77	49.99	S
METALWORKING CRAFT WRKRS, EXC	6325.0	6276.0	.568173	33265.4	-4691.4	1586.6	.16	5.54	11.19	
BLACKSMITHS	55.0	-6.0	-.000543	169.7	-84.7	-90.7	-.01	-62.12	-125.36	
BOILERMAKERS	484.0	1047.0	.094756	2022.4	280.6	1327.6	.14	76.30	153.99	B
HEAT TREATERS, ANNEALERS ETC	154.0	0.0	0.000000	739.2	-257.2	-257.2	-.03	-40.44	-81.62	
FORGE AND HAMMER OPERATORS	77.0	63.0	.005702	494.0	-83.0	-20.0	-.00	-4.70	-9.48	
JOB AND DIE SETTERS, METAL	341.0	641.0	.058012	2104.9	6.1	647.1	.07	35.73	72.11	F
MACHINIST AND APPRENTICES	2090.0	1565.0	.141636	11021.8	-2063.8	-498.8	-.05	-5.26	-10.62	
MILLWRIGHTS	586.0	763.0	.069053	2297.9	-63.8	699.2	.07	35.37	71.37	F
MOLDERS, METAL AND APPRENTICE	165.0	140.0	.012670	927.5	-154.5	-14.5	-.00	-1.82	-3.67	
PATTERN AND MODEL MAKERS	363.0	213.0	.019277	1463.3	-354.3	-141.3	-.01	-11.22	-22.65	
ROLLERS AND FINISHERS, METAL	132.0	117.0	.010589	655.5	-106.5	10.5	.00	1.86	3.75	
SHEETMETAL WORKERS AND APPR	847.0	395.0	.035748	5735.8	-1252.8	-857.8	-.09	-17.38	-35.08	
TOOL AND DIEMAKERS AND APPR	1100.0	1329.0	.120277	5633.5	-557.5	771.5	.08	15.92	32.12	S
MECHANICS, REPAIRERS, INSTAL	13981.0	21861.0	1.978465	76798.4	-2842.4	19018.6	1.94	28.78	58.09	
AIR COND, HEATING, REFRIG	1639.0	3222.0	.291593	7601.3	521.7	3743.7	.38	57.24	115.53	C
AIRCRAFT MECHANICS	143.0	121.0	.010951	1337.8	-208.8	-87.8	-.01	-7.63	-15.39	
AUTO ACCESSORIES INSTALLERS	33.0	16.0	.001448	166.2	-40.2	-24.2	-.00	-16.93	-34.16	
AUTO BODY REPAIRERS	385.0	533.0	.048238	3625.1	-358.1	174.9	.02	5.61	11.31	G
AUTO MECHANICS AND APPRENT	3817.0	6565.0	.594147	23324.6	-466.6	6098.4	.62	30.78	62.13	F
DATA PROCESSING MACHINE REPAI	143.0	1014.0	.091769	1968.9	596.1	1610.1	.16	95.05	191.82	B
FARM IMPLEMENT	154.0	295.0	.026698	535.3	66.2	361.2	.04	78.35	158.12	A
HEAVY EQUIP MECH, INCL DIESEL	4848.0	4792.0	.433686	19922.5	-2037.5	2754.5	.28	16.07	32.43	S
HOUSEHOLD APPLIANCE MECHAN	880.0	1290.0	.116748	4140.0	-168.0	1122.0	.11	31.58	63.57	F
LOOM FIXERS	55.0	9.0	.000815	191.8	-72.8	-63.8	-.01	-38.65	-78.01	
OFFICE MACHINE REPAIRERS	242.0	980.0	.088692	2145.6	438.4	1418.4	.14	76.84	155.07	B
RADIO, TELEVISION REPAIRERS	627.0	1269.0	.114847	3257.9	187.1	1456.1	.15	51.95	134.84	B
RAILROAD, CAR SHOP REPAIRERS	220.0	142.0	.012851	925.2	-207.2	-65.2	-.01	-8.19	-16.52	
OTHER MECHANICS AND APPREN	1573.0	1591.0	.143989	7955.8	-1092.8	498.2	.05	7.28	14.69	S
PRINTING TRADE CRAFTS WRKRS	3531.0	2353.0	.212952	15388.5	-3326.5	-973.5	-.10	-7.35	-14.84	
BOOKBINDERS	473.0	368.0	.033305	1183.3	-269.9	98.1	.01	9.66	19.49	
COMPOSITORS AND TYPESETTERS	1537.0	486.0	.043984	6011.3	-1860.3	-1374.3	-.14	-26.57	-53.63	
ELECTROTYPERS, STEREOTYPERS	44.0	26.0	.002353	119.7	-34.7	-8.7	-.00	-8.46	-17.07	
ENGRAVERS, EXC PHOTOENGRAVERS	132.0	73.0	.006607	408.0	-116.0	-43.0	-.00	-12.24	-24.70	
PHOTOENGRAVERS, LITHOGRAPHER	275.0	286.0	.025884	1347.1	-177.1	138.9	.01	9.40	18.97	S
PRINTING PRESS OPRS AND APPR	1100.0	1114.0	.100819	6321.6	-808.6	245.4	.02	4.51	9.11	S
TRANSPORTATION, PUB UTIL CRAF	1537.0	1290.0	.116748	13460.0	-2089.0	-799.0	-.08	-6.93	-13.98	
ELEC PWR LINE INSTAL, REPRS	176.0	269.0	.024345	1547.0	-123.0	146.0	.01	10.97	22.14	S

PHILA. [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES: 1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0-+	ALL OTHER G>T</100

S / G</100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
LOCOMOTIVE ENGINEERS	744.0	839.0	95.0	12.8	9.0	26.0	35.0	455	?
LOCOMOTIVE ENGINEER HELPERS	111.0	51.0	-60.0	-54.1	-5.0	2.0	-4.0	456	
POWER STATION OPERATORS	290.0	297.0	7.0	2.4	1.0	7.0	8.0	525	S
TELEPHONE INSTALLERS, REPAIR	9102.0	8953.0	-149.0	-1.6	-14.0	81.0	67.0	552	
TELEPHONE LINE INSTALL., SPLIC	956.0	753.0	-203.0	-21.2	-18.0	6.0	-13.0	554	
OTHER CRAFTS, KINDRED WRKRS	36589.0	33899.0	-2690.0	-7.4	-245.0	1120.0	879.0	0	
BAKERS	3913.0	3354.0	-559.0	-14.3	-51.0	133.0	82.0	402	
CABINETMAKERS	1650.0	1489.0	-161.0	-9.8	-15.0	45.0	30.0	413	
CARPET INSTALLERS	1260.0	1398.0	138.0	11.0	13.0	13.0	26.0	420	?
CRANE, DERRICK, AND HOIST OPE	5090.0	4855.0	-235.0	-4.6	-21.0	97.0	76.0	424	
DECORATORS, WINDOW DRESSERS	1724.0	1894.0	170.0	9.9	15.0	79.0	94.0	425	
DENTAL LABORATORY TECH	875.0	907.0	32.0	3.7	3.0	32.0	35.0	426	S
FURNITURE AND WOOD FINISHER	512.0	436.0	-76.0	-14.8	-7.0	18.0	11.0	443	
FURRIERS	130.0	103.0	-27.0	-20.8	-2.0	9.0	6.0	444	A
GLAZIERS	745.0	981.0	236.0	31.7	21.0	20.0	42.0	445	
INSPECTORS, LOG AND LUMBER	20.0	7.0	-13.0	-65.0	-1.0	0.0	-1.0	450	
INSPECTORS, OTHER	3596.0	3417.0	-179.0	-5.0	-16.0	106.0	90.0	452	
JEWELERS AND WATCHMAKERS	817.0	780.0	-37.0	-4.5	-3.0	34.0	30.0	453	
MILLERS, GRAIN, FLOUR, FEED	12.0	12.0	0.0	0.0	0.0	0.0	0.0	501	
MOTION PICTURE PROJECTIONIST	326.0	332.0	6.0	1.8	1.0	30.0	30.0	505	
OPTICIANS, LENS GRINDR, POLIS	1009.0	1536.0	527.0	52.2	48.0	13.0	60.0	506	3
PIANO, ORGAN TUNERS, REPAIRERS	209.0	185.0	-24.0	-11.5	-2.0	11.0	9.0	516	
SHIPFITTERS	749.0	622.0	-127.0	-17.0	-12.0	11.0	-1.0	540	
SHOE REPAIRERS	797.0	627.0	-170.0	-21.3	-15.0	46.0	31.0	542	
SIGN PAINTERS AND LETTERERS	447.0	432.0	-15.0	-3.4	-1.0	16.0	15.0	543	
STATIONARY ENGINEERS	4861.0	4120.0	-741.0	-15.2	-67.0	136.0	69.0	545	
STONE CUTTERS, STONE CARVERS	92.0	97.0	5.0	5.4	0.0	2.0	2.0	546	3
TAILORS	3209.0	2411.0	-798.0	-24.9	-73.0	132.0	60.0	551	
UPHOLSTERERS	1115.0	1078.0	-37.0	-3.3	-3.0	39.0	35.0	563	
CRAFTS AND KINDRED WRKRS, NEC	3431.0	2826.0	-605.0	-17.6	-55.0	78.0	23.0	571,575	
OPERATIVES	319228.0	309465.0	-9763.0	-3.1	-888.0	9758.0	8871.0	0	
OPERATIVES, EXC TRANSPORT	245799.0	232093.0	-13706.0	-5.6	-1246.0	8233.0	6987.0	0	
SEMISKILLED METALWORKING	34056.0	33951.0	-105.0	-.3	-10.0	717.0	708.0	0	
DRILL PRESS OPERATIVES	1963.0	1731.0	-232.0	-11.8	-21.0	44.0	23.0	650	
FURNACE TENDRS, SMELTRS, POURER	1478.0	1455.0	-23.0	-1.6	-2.0	29.0	27.0	622	
GRINDING MACHINE OPERATIVES	3336.0	3146.0	-190.0	-5.7	-17.0	65.0	48.0	651	
HEATERS, METAL	248.0	207.0	-41.0	-16.5	-4.0	6.0	2.0	626	
LATHE, MILLING MACH OPERATIVE	5213.0	4791.0	-422.0	-8.1	-34.0	94.0	60.0	652	
METAL PLATERS	738.0	724.0	-14.0	-1.9	-1.0	14.0	13.0	655	
OTHER PRECISION MACH OPERATOR	1862.0	1850.0	-12.0	-.6	-1.0	36.0	35.0	653	
PUNCH STAMPING PRESS OPERATIV	4147.0	3823.0	-324.0	-7.8	-30.0	100.0	70.0	656	
SOLDERERS	1016.0	584.0	-432.0	-42.5	-39.0	35.0	-4.0	665	
WELDERS AND FLAME CUTTERS	13769.0	15323.0	1554.0	11.3	144.0	289.0	433.0	680	?

PHILA. BLS [illegible]

1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	
.01-.09	.10-.19	.20-.49	.50-.99	1.0-+	ALL OTHER G >7<100	S 0<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
LOCOMOTIVE ENGINEERS	286.0	381.0	.034481	864.7	-25.7	355.3	.04	47.75	96.37	F
LOCOMOTIVE ENGINEER HELPERS	22.0	-38.0	-.003439	123.0	-78.0	-116.0	-.01	-104.53	-210.93	
POWER STATION OPERATORS	77.0	84.0	.007602	337.1	-40.1	43.9	.00	15.15	30.58	B
TELEPHONE INSTALLERS, REPAIRE	[illegible]	731.0	.066157	9416.7	-1463.7	-732.7	-.07	-9.04	-18.25	
TELEPHONE LINE INSTALR, SPLIC	66.0	-137.0	-.012399	1113.5	-350.5	-435.5	-.05	-51.72	-104.38	
OTHER CRAFTS, KINDRED WRKRS	12420.0	9630.0	.871536	42526.4	-8627.4	1002.6	.10	2.74	5.53	
BAKERS	1063.0	904.0	.081814	4548.0	-1194.0	-290.0	-.03	-7.41	-14.96	
CABINETMAKERS	435.0	334.0	.030228	1317.3	-428.8	-94.8	-.01	-5.74	-11.59	
CARPET INSTALLERS	143.0	281.0	.025431	1454.5	-66.5	214.5	.02	17.03	34.36	F
CRANE,DERRICK,AND HOIST OPR	1367.0	832.0	.075298	5915.0	-1061.0	-229.0	-.02	-4.50	-9.08	
DECORATORS, WINDOW DRESSERS	969.0	1039.0	.094032	2003.8	-109.8	929.2	.09	53.90	108.78	
DENTAL LABORATORY TECH	352.0	384.0	.034753	1017.0	-110.0	274.0	.03	31.32	63.20	B
FURNITURE AND WOOD FINISHER	198.0	122.0	.011041	595.1	-159.1	-37.1	-.00	-7.24	-14.62	
FURRIERS	99.0	72.0	.006516	151.1	-48.1	23.9	.00	18.39	37.11	
GLAZIERS	220.0	456.0	.041269	865.9	115.1	571.1	.06	76.66	154.71	A
INSPECTORS, LOG AND LUMBER	0.0	-13.0	-.001177	23.2	-16.2	-29.2	-.00	-146.23	-295.11	
INSPECTORS, OTHER	1166.0	987.0	.089326	4173.5	-762.5	224.5	.02	6.24	12.60	
JEWELERS AND WATCHMAKERS	374.0	337.0	.030499	949.6	-169.6	167.4	.02	20.49	41.36	
MILLERS, GRAIN, FLOUR, FEED	0.0	0.0	0.000000	13.9	-1.9	-1.9	-.00	-16.23	-32.75	
MOTION PICTURE PROJECTIONIST	330.0	336.0	.030419	378.9	-46.9	289.1	.03	88.68	178.97	
OPTICIANS, LENS GRINDR, POLIS	363.0	390.0	.035547	1172.7	363.3	1253.3	.13	124.21	250.67	
PIANO,ORGAN TUNERS,REPAIRERS	121.0	97.0	.008779	242.9	-57.9	39.1	.00	18.70	37.74	
SHIPFITTERS	121.0	-6.0	-.000543	570.5	-248.5	-254.5	-.03	-33.98	-68.59	B
SHOE REPAIRERS	506.0	336.0	.030409	926.3	-299.3	36.7	.00	4.60	9.29	
SIGN PAINTERS AND LETTERERS	176.0	161.0	.014571	519.5	-87.5	73.5	.01	16.43	33.17	
STATIONARY ENGINEERS	1436.0	755.0	.068329	5649.9	-1529.8	-774.9	-.08	-15.94	-32.17	
STONE CUTTERS, STONE CARVERS	22.0	27.0	.002444	136.9	-9.9	17.1	.00	18.56	37.45	S
TAILORS	1452.0	654.0	.059188	3729.7	-1318.7	-604.7	-.07	-20.71	-41.81	
UPHOLSTERERS	429.0	392.0	.035477	1295.9	-217.9	174.1	.02	15.61	31.51	
CRAFTS AND KINDRED WRKRS.NEC	856.0	253.0	.022897	3987.8	-1161.6	-908.8	-.09	-26.49	-53.45	
OPERATIVES	117338.0	97575.0	8.832749	371030.3	-61565.3	36009.7	3.66	11.28	22.77	
OPERATIVES, EXC TRANSPORT	[illegible]562.0	76857.0	6.955725	285685.7	-53592.7	23264.3	2.37	9.46	19.10	
SEMISKILLED METALWORKING	7887.0	7782.0	.704283	39582.4	-5631.4	2150.6	.22	6.31	12.74	
DRILL PRESS OPERATIVES	484.0	252.0	.022807	2281.5	-556.5	-295.5	-.03	-15.21	-30.69	
FURNACE TENDERS,SMELTRS,POURER	330.0	307.0	.027794	1727.3	-262.8	44.2	.00	2.99	6.03	
GRINDING MACHINE OPERATIVES	715.0	525.0	.047514	3573.4	-730.4	-205.4	-.02	-6.17	-12.45	
HEATERS, METAL	56.0	25.0	.002263	244.7	-81.2	-56.2	-.01	-22.60	-45.77	
LATHE, MILLING MACH OPERATIVE	1078.0	661.0	.059822	6053.1	-1262.1	-601.1	-.06	-11.54	-23.29	
METAL PLATERS	154.0	140.0	.012670	857.3	-133.8	6.2	.00	.85	1.71	
OTHER PRECISION MACH OPERATOR	396.0	384.0	.034753	2164.2	-314.2	69.8	.01	3.75	7.57	
PUNCH STAMPING PRESS OPERATIV	[illegible]	[illegible]	[illegible]	[illegible]	-1000.9	-228.9	-.02	-5.52	-11.14	
SOLDERERS	315.0	-47.0	-.004254	1177.4	-596.4	-643.4	-.07	-63.51	-128.19	
WELDERS AND FLAME CUTTERS	2174.0	4783.0	.431062	16352.0	-699.0	4064.0	.41	28.89	58.30	F

AIRPHILA. BLS FORECAST. [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100

S / G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
SEMISKILLED TEXTILE	6647.0	3168.0	-3479.0	-52.3	-316.0	231.0	-85.0	0	
CARDING, LAPPING, COMBINE	94.0	25.0	-69.0	-73.4	-6.0	3.0	-3.0	670	
KNITTERS, LOOPERS, AND TOPPER	1371.0	597.0	-774.0	-56.5	-70.0	44.0	-27.0	671	
SPINNERS, TWISTERS, WINDERS	1444.0	713.0	-731.0	-49.4	-64.0	55.0	-8.0	672	
WEAVERS	654.0	286.0	-368.0	-56.3	-33.0	25.0	-8.0	673	
OTHER TEXTILE OPERATIVES	3109.0	1542.0	-1567.0	-50.4	-142.0	104.0	-38.0	674	
SEMISKILLED PACKING, INSPECT	43353.0	44494.0	1141.0	2.6	104.0	1789.0	1892.0	0	
CHECKERS, EXAMINERS, ETC.,MFG	17944.0	19690.0	1746.0	9.7	159.0	698.0	857.0	610	S
GRADERS AND SORTERS, MFG	864.0	828.0	-36.0	-4.2	-3.0	36.0	33.0	624	
MEAT WRAPPERS, RETAIL TRADE	1219.0	1370.0	151.0	12.4	14.0	61.0	74.0	634	A
PACKER,WRAPPER,EXC MEAT, PROD	23110.0	22350.0	-760.0	-3.3	-69.0	984.0	915.0	643	
PROD GRDR,PACKR,EXC FACT,FARM	216.0	256.0	40.0	18.5	4.0	10.0	14.0	625	A
OTHER OPERATIVES,EXC TRANSP	161743.0	150480.0	-11263.0	-7.0	-1024.0	5496.0	4472.0	0	
ASBESTOS, INSULATION WORKERS	718.0	1018.0	300.0	41.8	27.0	11.0	38.0	601	A
ASSEMBLERS	22043.0	22358.0	315.0	1.4	29.0	775.0	804.0	602	S
BLASTERS	25.0	20.0	-5.0	-20.0	0.0	0.0	0.0	603	
BOTTLING,CANNING OPERATIVES	1355.0	1308.0	-47.0	-3.5	-4.0	45.0	41.0	604	
SURVEYOR HELPERS	215.0	240.0	25.0	11.6	2.0	3.0	5.0	605	F
CLOTHING IRONERS AND PRESSERS	5244.0	3718.0	-1526.0	-29.1	-139.0	215.0	76.0	611	
CUTTING OPERATIVES, NEC	8015.0	7453.0	-562.0	-7.0	-51.0	256.0	205.0	612	
DRESSMAKERS, EXC FACTORY	2744.0	2181.0	-563.0	-20.5	-51.0	187.0	136.0	613	
DRILLERS,EARTH	344.0	371.0	27.0	7.8	2.0	8.0	11.0	614	S
DRY WALL INSTALLERS, LATHES	1487.0	1593.0	106.0	7.1	10.0	17.0	27.0	615	S
DYERS	622.0	464.0	-158.0	-25.4	-14.0	13.0	-2.0	620	
FILER,POLISHER,SANDER,BUFFER	1681.0	1607.0	-74.0	-4.4	-7.0	47.0	40.0	621	
GARAGE WRKRS,GAS STATION ATTE	6952.0	5995.0	-957.0	-13.8	-87.0	101.0	14.0	623	
LAUNDRY,DRY CLEANING OPRS, NE	3525.0	3535.0	10.0	.3	1.0	183.0	184.0	630	S
MEAT CUTTERS,BUTCHERS, EXC MF	5177.0	4798.0	-379.0	-7.3	-34.0	136.0	101.0	631	
MEAT CUTTERS, BUTCHERS	1566.0	1721.0	155.0	9.9	14.0	45.0	59.0	633	S
MILLINERS	50.0	28.0	-22.0	-44.0	-2.0	3.0	1.0	636	
MINE OPERATIVES, NEC	182.0	136.0	-46.0	-25.3	-4.0	4.0	-1.0	640	
MIXING OPERATIVES	2395.0	2186.0	-125.0	-5.2	-11.0	43.0	32.0	641	
OILERS, GREASERS, EXC AUTO	908.0	747.0	-161.0	-17.7	-15.0	21.0	6.0	642	
PAINTERS, MFG ARTICLES	4191.0	3977.0	-214.0	-5.1	-19.0	91.0	71.0	644	
PHOTOGRAPHIC PROCESS WORKERS	1927.0	2370.0	443.0	23.0	40.0	86.0	126.0	645	B
RIVETERS AND FASTENERS	422.0	404.0	-18.0	-4.3	-2.0	13.0	12.0	660	
SAILORS AND DECKHANDS	674.0	545.0	-129.0	-19.1	-12.0	9.0	-3.0	661	
SAWYERS	869.0	856.0	-13.0	-1.5	-1.0	20.0	19.0	662	
SEWERS AND STITCHERS	27170.0	21142.0	-6028.0	-22.2	-548.0	1400.0	852.0	663	
SHOEMAKING MACHINE OPERATIVES	71.0	40.0	-31.0	-43.7	-3.0	2.0	0.0	664	
FURNACE FENDR, STOKR METAL	2016.0	1621.0	-395.0	-19.6	-36.0	64.0	28.0	666	
WINDING OPERATIVES, NEC	1244.0	1214.0	-30.0	-2.4	-3.0	38.0	35.0	681	
MISC MACH OPERATIVES	[illegible]	[illegible]	-1543.0	-4.7	-149.0	913.0	764.0	690	
OPERATIVES, NEC	[illegible]	[illegible]	378.0	1.5	34.0	756.0	791.0	695	S

PHILA. BLS FORECAST, [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985
A .01-.09 | B .10-.19 | C .20-.49 | D .50-.99 | E 1.0- + | F ALL OTHER G>T<100 | S G < 100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
SEMISKILLED TEXTILE	2541.0	-938.0	-.084891	7725.6	-4557.6	-5495.6	-.56	-82.68	-166.86	
CARDING, LAPPING, COMBINE	33.0	-36.0	-.003258	109.3	-84.3	-120.3	-.01	-127.93	-258.18	
KNITTERS, LOOPERS, AND TOPPER	454.0	-290.0	-.026245	1593.5	-996.5	-1286.5	-.13	-93.83	-189.37	
SPINNERS, TWISTERS, WINDERS	635.	-96.0	-.008688	1649.3	-931.3	-1027.3	-.10	-72.39	-146.10	
WEAVERS	275.0	-93.0	-.008417	760.1	-474.1	-567.1	-.06	-86.72	-175.01	
THER TEXTILE OPERATIVES	1144.0	-423.0	-.038282	3613.5	-2071.5	-2494.5	-.25	-80.24	-161.93	
SEMISKILLED PACKING, INSPECT	19679.0	20820.0	1.884255	50388.1	-5894.1	14925.9	1.52	34.43	69.48	
CHECKERS, EXAMINERS, ETC,MFG	7578.0	9424.0	.852892	20855.8	-1165.8	8258.2	.84	46.02	92.88	S
GRADERS AND SORTERS, MFG	396.0	360.0	.032581	1334.2	-176.2	183.8	.02	21.27	42.93	
MEAT WRAPPERS, RETAIL TRADE	671.0	822.0	.074393	1416.8	-46.8	775.2	.08	63.59	128.34	A
PACKER,WRAPPER,EXC MEAT, PROD	10924.0	10064.0	.910814	26869.1	-4510.1	5553.9	.57	24.03	48.50	
PROD GRDR,PACKR,EXC FACT,FARM	110.0	150.0	.013575	251.1	4.9	154.9	.02	71.74	144.77	A
OTHER OPERATIVES,EXC TRANSP	60456.0	49193.0	4.452073	167969.6	-37509.6	11683.4	1.19	7.22	14.58	
ASBESTOS, INSULATION WORKERS	121.0	421.0	.038101	834.5	183.5	604.5	.06	84.19	169.91	A
ASSEMBLERS	8525.0	8840.0	.800039	25820.0	-3262.0	5578.0	.57	25.31	51.07	S
BLASTERS	0.0	-5.0	-.000453	29.1	-9.1	-14.1	-.00	-56.23	-113.48	
BOTTLING,CANNING OPERATIVES	495.0	449.0	.040545	1574.9	-266.9	161.1	.02	13.37	26.98	
SURVEYOR HELPERS	33.0	58.0	.005249	249.9	-9.9	48.1	.00	22.38	45.16	F
CLOTHING IRONERS AND PRESSER	2365.0	839.0	.075931	6395.0	-2377.0	-1538.0	-.16	-29.33	-59.19	
CUTTING OPERATIVES, NEC	2816.0	2254.0	.203992	9315.6	-1862.6	391.4	.04	4.88	9.85	
DRESSMAKERS, EXC FACTORY	2057.0	1494.0	.135216	3189.3	-1008.3	485.7	.05	17.70	35.72	
DRILLERS,EARTH	86.0	115.0	.010408	399.8	-28.8	86.2	.01	25.05	50.56	S
DRY WALL INSTALLERS, LATHES	197.0	293.0	.026517	1728.3	-135.3	157.7	.02	10.61	21.40	S
DYERS	143.0	-15.0	-.001358	722.9	-258.9	-273.9	-.03	-44.04	-88.88	
FILER,POLISHER,SANDER,BUFFER	517.0	443.0	.040092	1953.4	-346.8	96.2	.01	5.72	11.55	
GARAGE WRKRS,GAS STATION ATTE	1111.0	154.0	.013937	6080.1	-2085.1	-1931.1	-.20	-27.78	-56.06	
LAUNDRY,DRY CLEANING OPRS, NE	2317.0	2023.0	.183086	4397.0	-562.0	1461.0	.15	41.45	83.65	S
MEAT CUTTERS,BUTCHERS, EXC MF	1496.0	1117.0	.101091	6017.1	-1219.1	-102.1	-.01	-1.97	-3.98	
MEAT CUTTERS, BUTCHERS	495.0	650.0	.058826	1820.1	-99.1	550.9	.06	35.18	70.99	S
MILLINERS	33.0	11.0	.000996	58.1	-30.1	-19.1	-.00	-38.23	-77.15	
MINE OPERATIVES, NEC	44.0	-2.0	-.000181	211.5	-75.5	-77.5	-.01	-42.60	-85.98	
MIXING OPERATIVES	473.0	353.0	.031947	2680.2	-494.2	-141.2	-.01	-6.12	-12.36	
OILERS, GREASERS, EXC AUTO	225.0	59.0	.005340	1055.3	-308.3	-249.3	-.03	-27.46	-55.42	
PAINTERS, MFG ARTICLES	1931.0	787.0	.071225	4871.1	-894.1	-107.1	-.01	-2.56	-5.16	
PHOTOGRAPHIC PROCESS WORKERS	935.0	1378.0	.124712	2239.7	130.3	1508.3	.15	78.27	157.97	B
RIVETERS AND FASTENERS	143.0	125.0	.011313	493.5	-86.5	38.5	.00	9.13	18.42	
SAILORS AND DECK-HANDS	96.0	-30.0	-.002715	733.4	-238.4	-268.4	-.03	-39.82	-80.36	
SAWYERS	224.0	207.0	.018734	1010.0	-154.0	53.0	.01	6.10	12.31	
SEWERS AND STITCHERS	15430.0	9372.0	.848186	31579.0	-10437.0	-1065.0	-.11	-3.92	-7.91	
SHOEMAKING MACHINE OPERATIVES	22.0	-9.0	-.000815	42.5	-42.5	-51.5	-.01	-72.57	-146.45	
FURNACE TENDR, STOKR METAL	734.0	308.0	.027875	2343.1	-723.1	-415.1	-.04	-20.59	-41.56	
WINDING OPERATIVES, NEC	416.0	388.0	.035115	1445.9	-231.9	156.1	.02	12.55	25.33	
MISC MACH OPERATIVES	3955.0	8412.0	.761304	37955.9	-6829.9	1582.1	.16	4.86	9.83	
OPERATIVES, NEC	8316.0	8694.0	.786826	29545.8	-3747.0	4947.0	.50	19.46	39.28	S

[illegible] OCC [illegible] CAST. [illegible] GROUPINGS
1974 AND PROJECTED 1985 TOTAL RESIDENT EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES 1985 GREATER THAN 100						
PERCENT OF TARGET OPENINGS IN 1985						
A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	1985	CHANGE FROM 74 TO 85 NOS.	PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
TRANSPORT EQUIPMENT OPERATIVE	73429.0	77372.0	3943.0	5.4	358.0	1525.0	1884.0	0	
BOAT OPERATORS	75.0	47.0	-28.0	-37.3	-3.0	3.0	1.0	701	
BUS DRIVERS	4513.0	4892.0	379.0	8.4	34.0	169.0	203.0	703	S
CONDUCTORS AND OPS, URBAN RAI	302.0	375.0	73.0	24.2	7.0	7.0	14.0	704	A
DELIVERY AND ROUTE WORKERS	22731.0	23124.0	393.0	1.7	36.0	423.0	459.0	705	S
FORK LIFT, TOW MOTOR OPERATIVE	8571.0	9370.0	799.0	9.3	73.0	130.0	203.0	706	S
RAIL VEHICLE OPERATOR, NEC	52.0	62.0	10.0	19.2	1.0	2.0	2.0	710	F
PARKING ATTENDANTS	1126.0	1115.0	-11.0	-1.0	-1.0	42.0	41.0	711	
RAILROAD BRAKE OPERATORS	1068.0	1155.0	87.0	8.1	8.0	21.0	29.0	712	S
RAILROAD SWITCH OPERATORS	464.0	472.0	8.0	1.7	1.0	9.0	9.0	713	J
TAXICAB DRIVERS, CHAUFFEURS	5810.0	7265.0	1455.0	25.1	132.0	251.0	383.0	714	C
TRUCK DRIVERS	28719.0	29497.0	778.0	2.7	71.0	469.0	539.0	715	S
SERVICE WORKERS	238094.0	274236.0	36142.0	15.2	3286.0	14014.0	17300.0	0	
CLEANING SERVICE WORKERS	44990.0	56020.0	11030.0	24.5	1003.0	2750.0	3753.0	0	
LODGING QUARTRS CLEANRS, EXC P	3964.0	5271.0	1307.0	33.0	119.0	309.0	428.0	901	D
BLDG INTERIOR CLEANERS, NEC	16409.0	22416.0	6007.0	36.6	546.0	1083.0	1629.0	902	E
JANITORS AND SEXTONS	24617.0	28333.0	3716.0	15.1	338.0	1358.0	1695.0	903	E
FOOD SERVICE WORKERS	75361.0	82504.0	7143.0	9.5	649.0	3921.0	4571.0	0	
BARTENDERS	7256.0	8186.0	930.0	12.8	85.0	313.0	398.0	910	C
WAITERS ASSISTANTS	4157.0	4260.0	103.0	2.5	9.0	60.0	69.0	911	S
COOKS, EXC PRIVATE	14915.0	17755.0	2840.0	19.0	258.0	771.0	1029.0	912	E
DISHWASHERS	4264.0	4563.0	299.0	7.0	27.0	163.0	190.0	913	
FOOD COUNTER, FOUNTAIN WORKER	8473.0	9153.0	680.0	8.0	62.0	458.0	520.0	914	
WAITERS	24835.0	26490.0	1655.0	6.7	150.0	1513.0	1663.0	915	
FOOD WORKERS, NEC, EXC PRIVAT	11451.0	12087.0	636.0	5.6	58.0	644.0	702.0	916	
HEALTH SERVICE WORKERS	33118.0	48777.0	15659.0	47.3	1424.0	2603.0	4027.0	0	
DENTAL ASSISTANTS	2095.0	3193.0	1098.0	52.4	100.0	187.0	287.0	921	C
HEALTH AIDES, EXC NURSING	3193.0	4607.0	1414.0	44.3	129.0	233.0	361.0	922	D
HEALTH TRAINEES	391.0	92.0	-299.0	-76.5	-27.0	24.0	-3.0	923	
NURSES AIDES, ORDERLIES	14321.0	19377.0	5056.0	35.3	460.0	970.0	1430.0	925	E
PRACTICAL NURSES	13118.0	21508.0	8390.0	64.0	763.0	1188.0	1951.0	926	E
PERSONAL SERVICE WORKERS	31928.0	39601.0	7673.0	24.0	698.0	2159.0	2857.0	0	
FLIGHT ATTENDANTS	177.0	219.0	42.0	23.7	4.0	19.0	23.0	931	A
ATTEND, RECREATION, AMUSEMENT	1152.0	1372.0	220.0	19.1	20.0	46.0	66.0	932	A
ATTEND, PERSONAL SERVICE, NEC	1429.0	1620.0	191.0	13.4	17.0	126.0	144.0	933	B
BAGGAGE PORTERS AND BELLHOPS	266.0	227.0	-39.0	-14.7	-4.0	7.0	3.0	934	
BARBERS	3584.0	3024.0	-560.0	-15.6	-51.0	147.0	96.0	935	
BOARDING, LODGING HOUSEKEEPER	465.0	556.0	91.0	19.5	8.0	49.0	57.0	940	A
BOOTBLACKS	37.0	9.0	-28.0	-75.7	-3.0	2.0	-1.0	941	
CHILD CARE WORKERS, EXC PRI	8154.0	13301.0	5147.0	63.1	468.0	686.0	1154.0	942	E
ELEVATOR OPERATORS	1204.0	798.0	-406.0	-33.8	-37.0	71.0	34.0	943	

PHILA. [illegible] OCCUPATIONS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	S
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100	G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE
TRANSPORT EQUIPMENT OPERATIVE	16775.0	20718.0	1.875024	85344.6	-7972.6	12745.4	1.30	17.36	35.03
BOAT OPERATORS	37.0	5.0	.000453	87.2	-40.2	-35.2	-.00	-46.89	-94.64
BUS DRIVERS	1499.0	2238.0	.202544	5245.3	-353.3	1884.7	.19	41.76	84.28
CONDUCTORS, [illegible]	77.0	150.0	.013575	351.0	24.0	174.0	.02	57.61	116.27
DELIVERY AND ROUTE WORKERS	4658.0	5046.0	.456674	26419.5	-3295.6	1750.4	.18	7.70	15.54
FORK LIFT,TOW MOTOR OPERATIVE	1438.0	2229.0	.201729	9961.8	-591.8	1637.2	.17	19.10	38.55
RAIL VEHICLE OPERATOR, NEC	22.0	32.0	.002896	60.4	1.6	33.6	.00	64.54	130.26
PARKING ATTENDANTS	462.0	451.0	.040816	1308.7	-193.7	257.3	.03	22.85	46.11
RAILROAD BRAKE OPERATORS	231.0	318.0	.028780	1241.3	-86.3	231.7	.02	21.69	43.78
RAILROAD SWITCH OPERATORS	99.0	107.0	.009684	539.3	-67.3	39.7	.00	8.56	17.27
TAXICAB DRIVERS, CHAUFFEURS	2761.0	4216.0	.381557	6750.5	512.5	4728.5	.48	81.41	164.31
TRUCK DRIVERS	5159.0	5937.0	.537311	33379.3	-3882.3	2054.7	.21	7.15	14.44
SERVICE WORKERS	154154.0	190295.0	17.222199	276730.4	-2494.4	187831.6	19.11	78.88	159.19
CLEANING SERVICE WORKERS	30250.0	41280.0	3.735925	52230.7	3723.3	45009.3	4.58	100.04	201.90
LODGING QUARTRS CLEANRS,EXC P	3399.0	4706.0	.425903	4607.3	663.7	5369.7	.55	135.46	273.39
BLDG INTERIOR CLEANERS, NEC	11913.0	17920.0	1.621799	19071.3	3344.2	21264.2	2.16	129.59	261.53
JANITORS AND SEXTONS	14938.0	18654.0	1.688227	29611.7	-278.7	18375.3	1.87	74.64	150.65
FOOD SERVICE WORKERS	47131.0	50274.0	4.549865	87590.1	-5086.1	45187.9	4.60	59.96	121.01
BARTENDERS	3443.0	4373.0	.395766	8445.1	-249.1	4123.9	.42	56.76	114.54
WAITERS ASSISTANTS	663.0	763.0	.069053	4831.6	-571.6	191.4	.02	4.60	9.29
COOKS, EXC PRIVATE	8431.0	11321.0	1.024575	17335.3	419.7	11740.7	1.19	78.72	158.86
DISHWASHERS	1793.0	2092.0	.189331	4955.9	-392.9	1699.1	.17	39.85	80.42
FOOD COUNTER, FOUNTAIN WORKER	5330.0	5716.0	.517491	9947.9	-694.9	5023.1	.51	59.28	119.64
WAITERS	16443.0	18298.0	1.656010	28865.1	-2375.1	15922.9	1.62	64.11	129.39
FOOD WORKERS, NEC, EXC PRIVAT	7384.0	7720.0	.698677	13309.2	-1222.2	6497.8	.66	56.74	114.52
HEALTH SERVICE WORKERS	28533.0	44292.0	4.008522	38492.2	10284.8	54576.8	5.55	164.48	332.58
DENTAL ASSISTANTS	2157.0	3155.0	.285534	2435.0	758.0	3913.0	.40	186.78	376.95
HEALTH AIDES, EXC NURSING	2553.0	3977.0	.359927	3711.1	995.9	4872.9	.50	152.61	307.99
HEALTH TRAINEES	264.0	-35.0	-.003168	454.4	-362.4	-397.4	-.04	-101.65	-205.15
NURSES AIDES, ORDERLIES	10472.0	15726.0	1.423237	16644.3	2732.1	18458.1	1.88	128.89	260.12
PRACTICAL NURSES	12156.0	21458.0	1.941995	15246.7	6261.3	27719.3	2.82	211.31	426.45
PERSONAL SERVICE WORKERS	23749.0	31422.0	2.843759	37109.1	2491.9	33913.9	3.45	186.22	214.37
FLIGHT ATTENDANTS	239.0	251.0	.022716	205.7	13.3	264.3	.03	149.31	301.33
ATTEN, RECREATION, AMUSEMENT	536.0	726.0	.065705	1336.9	33.1	759.1	.08	65.89	132.98
ATTEN, PERSONAL SERVICE, NEC	1315.0	1577.0	.142722	2125.8	-105.8	1471.2	.15	80.44	162.34
BAGGAGE PORTERS AND BELLHOPS	77.0	38.0	.003439	309.2	-82.2	-44.2	-.00	-16.60	-33.51
BARBERS	1617.0	1057.0	.095661	4165.6	-1141.6	-84.6	-.01	-2.36	-4.76
BOARDING, LODGING HOUSEKEEPER	539.0	630.0	.057016	540.5	15.5	645.5	.07	139.83	280.17
BOOTBLACKS	22.0	-6.0	-.000543	43.0	-34.0	-40.0	-.00	-108.12	-218.20
CHILD CARE WORKERS, EXC PRI	7546.0	12693.0	1.148744	9477.2	3823.8	16516.8	1.68	202.56	408.80
ELEVATOR OPERATORS	781.0	373.0	.033757	1401.7	-603.7	-230.7	-.02	-19.13	-38.61

[illegible]
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>7<100	G G<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
HAIRDRESSERS, COSMETOLOGISTS	9961.0	11769.0	1808.0	18.2	164.0	714.0	878.0	944	E
HOUSEKEEPERS, EXC PRIVATE	2079.0	2100.0	21.0	1.0	2.0	123.0	124.0	950	
SCHOOL MONITORS	678.0	1037.0	359.0	52.9	33.0	33.0	65.0	952	B
USHERS, RECREACTION, AMUSEMEN	383.0	333.0	-50.0	-13.1	-5.0	9.0	3.0	953	
WELFARE SERVICE AIDES	1957.0	2836.0	879.0	44.9	80.0	131.0	210.0	954	C
PROTECTIVE AND SERVICE WORKER	33646.0	32779.0	-867.0	-2.6	-79.0	1194.0	1115.0	0	
CROSSING GUARD, BRIDGETENDERS	2033.0	1830.0	-203.0	-10.0	-18.0	129.0	111.0	960	
FIREFIGHTERS	3759.0	3355.0	-404.0	-10.7	-37.0	57.0	20.0	961	
GUARDS	14248.0	12946.0	-1302.0	-9.1	-118.0	788.0	669.0	962	
MARSHALS AND CONSTABLES	46.0	57.0	11.0	23.9	1.0	4.0	5.0	963	
POLICE AND DETECTIVES	13087.0	14127.0	1040.0	7.9	95.0	185.0	279.0	964	G
SHERIFFS AND BAILIFFS	473.0	464.0	-9.0	-1.9	-1.0	31.0	31.0	965	
PRIVATE HOUSEHOLD WORKERS	18851.0	14355.0	-4496.0	-23.6	-409.0	1387.0	978.0	0	
CHILD CARE WORKERS	4546.0	3168.0	-1378.0	-30.3	-125.0	326.0	201.0	980	
COOKS,PRIVATE	723.0	561.0	-162.0	-22.4	-15.0	59.0	44.0	981	
HOUSEKEEPERS, PRIVATE HOUSE	1898.0	1485.0	-413.0	-21.8	-38.0	145.0	107.0	982	
LAUNDERERS, PRIVATE HOUSEHOLD	148.0	75.0	-73.0	-51.0	-7.0	10.0	3.0	983	
PRIV HOUSEHOLD CLEANRS, SERVA	11741.0	9271.0	-2470.0	-21.0	-225.0	847.0	623.0	984	
LABORERS, EXCEPT FARM	83797.0	85888.0	2091.0	2.5	193.0	1960.0	2150.0	0	
ANIMAL CARETAKERS, EXC FARM	1651.0	2825.0	1174.0	71.1	107.0	84.0	191.0	740	C
CARPENTERS HELPERS	2126.0	2013.0	-113.0	-5.3	-10.0	33.0	23.0	750	
CONSTR LABR,EXC CARPENTER HEL	14604.0	14678.0	74.0	.5	7.0	341.0	348.0	751	G
FISHERS, HUNTERS AND TRAPPERS	119.0	205.0	86.0	72.3	8.0	3.0	11.0	752	F
FREIGHT, MATERIAL HANDLERS	16968.0	16447.0	-521.0	-3.1	-47.0	313.0	266.0	753	
GARBAGE COLLECTORS	1859.0	2359.0	500.0	26.9	45.0	40.0	86.0	754	B
GARDENERS,GROUNDKEEPRS,EXC FAR	9941.0	12097.0	2156.0	21.7	196.0	410.0	606.0	755	D
LONGSHORE WORKERS, STEVEDORES	1826.0	1708.0	-118.0	-6.5	-11.0	52.0	42.0	760	
TIMBERCUTTING, LOGGING WORKER	38.0	27.0	-11.0	-28.9	-1.0	1.0	0.0	761	
STOCK HANDLERS	15536.0	16102.0	566.0	3.6	51.0	301.0	353.0	762	G
TEAMSTERS	24.0	27.0	3.0	12.5	0.0	0.0	1.0	763	F
VEHICLE WASHERS, EQUIP CLEANR	4315.0	4237.0	-78.0	-1.8	-7.0	77.0	69.0	764	
WAREHOUSE LABORERS, NEC	3466.0	2987.0	-479.0	-13.8	-44.0	59.0	15.0	770	
OTHER LABORERS	11124.0	9976.0	-1148.0	-10.3	-104.0	245.0	140.0	780	
FARMERS AND FARM WORKERS	13635.0	10243.0	-3392.0	-24.9	-308.0	417.0	109.0	0	
FARMERS AND FARM MANAGERS	4988.0	3827.0	-1161.0	-23.3	-106.0	194.0	89.0	0	
FARMERS (OWNERS AND TENANTS)	4641.0	3398.0	-1243.0	-26.8	-113.0	193.0	79.0	801	
FARM MANAGERS	347.0	429.0	82.0	23.6	7.0	12.0	19.0	802	
FARM LABORERS, FARM SUPERVISO	8647.0	6416.0	-2231.0	-25.8	-203.0	223.0	20.0	0	
FARM LABOR SUPERVISORS	194.0	186.0	-8.0	-4.1	-1.0	6.0	6.0	821	
FARM LABORERS, WAGE WORKERS	6618.0	4537.0	-2081.0	-31.4	-189.0	161.0	-28.0	822	
FARM LABORERS, UNPAID FAMILY	1823.0	1680.0	-143.0	-7.8	-13.0	55.0	42.0	823	

PHILA. [illegible] FORECAST, OLS 6-[illegible]
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 19[illegible]
PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER

5
G 6/08

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
HAIRDRESSERS, COSMETOLOGISTS	7854.0	9662.0	.074432	11577.6	191.6	9853.6	1.00	98.92	199.64	E
HOUSEKEEPERS, EXC PRIVATE	1353.0	1374.0	.124350	2416.4	-316.4	1057.6	.11	98.07	192.67	
SCHOOL MONITORS	363.0	722.0	.065343	788.0	249.0	971.0	.10	143.21	289.03	B
USHERS, RECREATION, AMUSEMENT	98.0	38.0	.003439	449.2	-112.2	-74.2	-.01	-19.36	-39.37	
WELFARE SERVICE AIDES	1441.0	2320.0	.209965	2274.0	501.4	2841.4	.29	147.24	297.15	C
PROTECTIVE AND SERVICE WORKER	13134.0	12267.0	1.110197	39135.9	-6326.9	5940.1	.60	17.65	35.63	
CROSSING GUARD, BRIDGETENDERS	1419.0	1216.0	.110051	2362.9	-532.9	683.1	.07	33.60	67.81	
FIREFIGHTERS	627.0	223.0	.020182	4369.0	-1014.0	-791.0	-.08	-21.04	-42.47	
GUARDS	8668.0	7366.0	.666634	16560.1	-3614.1	3751.9	.38	26.33	53.14	
MARSHALS AND CONSTABLES	44.0	55.0	.004978	53.5	3.5	58.5	.01	127.25	256.81	
POLICE AND DETECTIVES	2835.0	3075.0	.278294	15210.7	-1083.7	1991.3	.20	15.22	30.71	
SHERIFFS AND BAILIFFS	341.0	332.0	.030047	549.8	-85.8	246.2	.03	52.06	105.07	
PRIVATE HOUSEHOLD WORKERS	15257.0	10761.0	.973894	22142.5	-7587.5	3173.5	.32	16.66	33.62	
CHILD CARE WORKERS	3586.0	2208.0	.199829	5203.7	-2115.7	92.3	.01	2.03	4.10	
COOKS, PRIVATE	649.0	487.0	.044075	849.3	-279.3	207.7	.02	28.72	57.97	
HOUSEKEEPERS, PRIVATE HOUSE	1595.0	1182.0	.106974	2206.0	-721.0	461.0	.05	24.29	49.02	
LAUNDERERS, PRIVATE HOUSEHOLD	110.0	37.0	.003349	166.2	-96.2	-59.2	-.01	-41.49	-83.96	
PRIV HOUSEHOLD CLEANRS, SERVA	9317.0	6847.0	.619668	13646.3	-4375.3	2471.7	.25	21.05	42.49	
LABORERS, EXCEPT FARM	21567.0	23654.0	2.140767	97395.1	-11507.1	12143.9	1.24	14.49	29.25	
ANIMAL CARETAKERS, EXC FARM	924.0	2098.0	.189876	1918.9	906.1	3004.1	.31	181.96	367.22	C
CARPENTERS HELPERS	363.0	250.0	.022626	2471.0	-458.0	-208.0	-.02	-9.78	-19.74	
CONSTR LABR, EXC CARPENTER HEL	3751.0	3825.0	.346171	17206.3	-2328.3	1496.7	.15	10.11	20.40	
FISHERS, HUNTERS AND TRAPPERS	33.0	119.0	.010770	138.3	66.7	185.7	.02	156.04	314.92	F
FREIGHT, MATERIAL HANDLERS	3443.0	2922.0	.264447	19721.5	-3274.5	-352.5	-.04	-2.08	-4.19	
GARBAGE COLLECTORS	440.0	948.0	.085872	2163.7	198.3	1138.3	.12	61.23	123.58	B
GARDENERS, GROUNDKEEPRS, EXC FAR	4515.0	6666.0	.603287	11554.2	542.0	7230.8	.73	72.52	146.35	D
LONGSHORE WORKERS, STEVEDORES	572.0	454.0	.041088	2122.3	-414.3	39.7	.06	2.17	4.39	
TIMBERCUTTING, LOGGING WORKER	11.0	0.0	0.000000	44.2	-17.2	-17.2	-.00	-45.17	-91.17	
STOCK HANDLERS	3311.0	3877.0	.350877	18057.1	-1955.1	1921.9	.20	12.37	24.97	
TEAMSTERS	5.0	3.0	.000272	27.9	-.9	2.1	.00	8.77	17.70	F
VEHICLE WASHERS, EQUIP CLEANR	947.0	769.0	.069596	5015.2	-778.2	-9.2	-.00	-.21	-.43	
WAREHOUSE LABORERS, NEC	649.0	170.0	.015385	4028.4	-1041.4	-871.4	-.09	-25.14	-50.74	
OTHER LABORERS	2639.0	1547.0	.140007	12929.1	-2953.1	-1406.1	-.14	-12.64	-25.51	
FARMERS AND FARM WORKERS	4587.0	1195.0	.108150	15847.6	-5604.6	-4409.6	-.45	-32.34	-65.27	
FARMERS AND FARM MANAGERS	2134.0	973.0	.088059	5797.4	-1970.4	-997.4	-.10	-22.08	-40.36	
FARMERS (OWNERS AND TENANTS)	2016.0	772.0	.069867	5334.1	-1996.1	-1226.1	-.12	-25.42	-53.32	
FARM MANAGERS	132.0	214.0	.019367	403.1	25.7	239.7	.02	59.08	139.41	
FARM LABORERS, FARM SUPERVISO	2453.0	222.0	.020091	10050.2	-3634.2	-3412.2	-.35	-39.46	-79.64	
FARM LABOR SUPERVISORS	58.0	95.0	.008924	226.5	-39.5	18.5	.00	9.55	19.27	
FARM LABORERS, WAGE WORKERS	1771.0	-313.0	-.024166	7431.9	-3154.9	-3404.9	-.35	-52.36	-105.66	
FARM LABORERS, UNPAID FAMILY	595.0	462.0	.041812	2113.8	-630.8	23.2	.00	1.27	2.57	

PHILA. JOBS [illegible] LEVELS GROUPINGS

1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILA. SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>T<100

5
Q<100

OCCUPATION TITLE	NO. EMPLOYED 1974	NO. EMPLOYED 1985	CHANGE FROM 74 TO 85 NOS.	CHANGE FROM 74 TO 85 PERCENT	AV. ANNUAL JOB OPENINGS DUE TO: GROWTH	LFS	GROWTH + LFS	CENSUS CODE	
FARM LABORERS, SELF-EMPLOYED	12.0	13.0	1.0	8.3	0.0	0.0	0.0	824	5

PHILA. [illegible] FORECAST, [illegible] OPENINGS
1974 AND PROJECTED 1985 TOTAL RESIDENCE EMPLOYMENT FOR PHILADELPHIA SMSA

GROWTH & TARGET CHANGE RATES:1985 GREATER THAN 100

PERCENT OF TARGET OPENINGS IN 1985

A	B	C	D	E	F	
.01-.09	.10-.19	.20-.49	.50-.99	1.0- +	ALL OTHER G>7<100	S G<100

OCCUPATION TITLE	TOTAL LFS OPENINGS	TOTAL OPENINGS	% TOTAL OPENINGS	LABOR FORCE 85	NOS EMP 85 - 85 LABOR FORCE	TARGET OPENINGS IN 85	% DISTR TARGET OPENINGS 85	TARGET OPENINGS % CHANGE	INDEX OF RELATIVE CHANGE	
FARM LABORERS, SELF-EMPLOYED	0.0	1.0	.000091	13.9	-.9	.1	.00	.44	.89	S

APPENDIX C

BLS FORECASTS OF REQUIREMENTS TO 1985 BY PHILADELPHIA SCHOOL DISTRICT CLUSTERS-SUMMARY

1-14: Career Development

15-20: Other

Section 1

Cols. 1 and 2:	Number employed in 1974 and forecast for 1985 respectively.
Cols. 3 and 4:	Change in number employed and percentage change 1974-1985.
Col. 5:	Col. 3 divided by 11.
Col. 6:	Total separations from the labor force divided by 11.
Col. 7:	Col. 5 plus Col. 6.

Section 2

Cols. 1, 2 and 7:	Number in Cols. 1, 2 and 7 (Section 1) in percent of totals in all occupations.
Cols. 1, 2 and 7:	Number in Cols. 1, 2 and 7 (Section 1) in percent of totals in clustered occupations.
Totals:	Cluster totals.
Grand Totals:	Totals of all occupations combined.

Section 3

Occupational Codes.

[illegible]

VOCATIONAL EDUCATION CLUSTERS
1-14: CAREER DEVELOPMENT
15-20: OTHER

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CLUSTER NO.  1 - POWER MECHANICS

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                                   NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                  1974       1985          NOS.       PERCENT      GROWTH       LFS      GROWTH + LFS

  AIRCRAFT MECHANICS            1151.000   1129.000      -22.000      -1.900      -2.000     13.000      11.000
  AUTO ACCESSORIES INSTALLERS    143.000    126.000      -17.000     -11.900      -2.000      3.000       2.000
  AUTO MECHANICS AND APPRENT   19809.000  22557.000     2748.000      13.900     259.000    347.000     597.000
  FARM IMPLEMENT                 461.000    602.000      141.000      30.600      13.000     14.000      27.000
  HEAVY EQUIP MECH, INCL DIESEL 17141.000  17885.000      744.000       4.300      68.000    369.000     436.000
  OTHER MECHANICS AND APPREN    6845.000   6863.000       14.000        .300       2.000    143.000     145.000
  GARAGE WRKRS,GAS STATION ATTE 6952.000   6000.000     -952.000     -13.700     -87.000    101.000      14.000
TOTALS                         52501.000  55156.000     2655.000       5.057     242.000    990.000    1232.000

  GRAND TOTALS                 1983431.0  2183117.0     199673.0                                10.1      18153.0      82298.0      100459.

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  AIRCRAFT MECHANICS            .0580326   .0517150                                            .0139497
  AUTO ACCESSORIES INSTALLERS   .0072097   .0057716                                            .0019909
  AUTO MECHANICS AND APPRENT    .9987713  1.0332432                                            .5942723
  FARM IMPLEMENT                .0232425   .0275753                                            .0268766
  HEAVY EQUIP MECH, INCL DIESEL .8642065   .8192415                                            .4340079
  OTHER MECHANICS AND APPREN    .3451174   .3143673                                            .1443375
  GARAGE WRKRS,GAS STATION ATTE .3505025   .2748374                                            .0139360

TOTALS                         2.6470734  2.5265710                                           1.2263710

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 AIRCRAFT MECHANICS               2.192      2.047                                               .893
 AUTO ACCESSORIES INSTALLERS       .272       .228                                               .162
 AUTO MECHANICS AND APPRENT      37.731     40.897                                             48.458
 FARM IMPLEMENT                    .878      1.091                                              2.192
 HEAVY EQUIP MECH, INCL DIESEL   32.649     32.425                                             35.390
 OTHER MECHANICS AND APPREN      13.037     12.442                                             11.769
 GARAGE WRKRS,GAS STATION ATTEN  13.241     10.889                                              1.136

TOTALS                          100.000    100.000                                            100.000

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 OCCUPATION TITLE               BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
 AIRCRAFT MECHANICS             50040100 471 621.281  -0.000    -0     0 17.040100 -0.000000 30
 AUTO ACCESSORIES INSTALLERS    50040150 401 806.884  -0.000    -0     0 17.230400 -0.000000 20
 AUTO MECHANICS AND APPRENT     50040250 473 620.281  -0.000    -0     0 17.030200 -0.000000 30
 FARM IMPLEMENT                 50040400 443 624.281  -0.000    -0     0  1.030100 -0.000000 30
 HEAVY EQUIP MECH, INCL DIESEL  50040450 441 625.281  -0.000    -0     0 17.100301 -0.000000 30
 OTHER MECHANICS AND APPREN     50040750 495  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
 GARAGE WRKRS,GAS STATION ATTE  61030650 623 915.867  -0.000    -0     0  4.160000 -0.000000 20

LFS = LABOR FORCE SEPARATION
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[illegible]

CLUSTER NO.  [illegible] - MANUFACTURING ELECTRO-MECHANICAL

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                                 NO. EMPLOYED        CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                1974        1985       NOS.       PERCENT      GROWTH       LFS       GROWTH + LFS

 ELECTRICAL, ELECTRONIC TECH    4367.000    4844.000    477.000   10.900       43.000       50.000     93.000
 INDUSTRIAL ENGINEERING TECH     665.000     893.000    228.000   34.300       21.000       14.000     35.000
 MECHANICAL ENGINEERING TECH     232.000     274.000     42.000   18.100        4.000        4.000      8.000
 AIR COND, HEATING, REFRIG      6540.000    8123.000   1583.000   24.200      144.000      149.000    293.000
 DATA PROCESSING MACHINE REPAI  1694.000    2565.000    871.000   51.400       79.000       13.000     93.000
 HOUSEHOLD APPLIANCE MECHAN     3562.000    3972.000    410.000   11.500       37.000       80.000    117.000
 OFFICE MACHINE REPAIRERS       1846.000    2584.000    738.000   40.000       67.000       22.000     89.000
TOTALS                         18906.000   23255.000   4349.000   23.003      395.000      332.000    728.000

 GRAND TOTALS                  1983434.0   2183107.0   199673.0                         10.1      18153.0      82298.0      100459.0

 CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS                                                   .0925751
 ELECTRICAL, ELECTRONIC TECH     .2231733    .2213846                                          .0348401
 INDUSTRIAL ENGINEERING TECH     .0335274    .0409048                                          .0079634
 MECHANICAL ENGINEERING TECH     .0116969    .0125509                                          .2916613
 AIR COND, HEATING, REFRIG       .3297305    .3720827                                          .0925751
 DATA PROCESSING MACHINE REPAI   .0854073    .1174926                                          .1164654
 HOUSEHOLD APPLIANCE MECHAN      .1795872    .1819417                                          .0885934
 OFFICE MACHINE REPAIRERS        .0930707    .1183629
                                                                                              .7246737
TOTALS                           .9531434   1.0652201

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 ELECTRICAL, ELECTRONIC TECH     23.099      20.830                                            12.775
 INDUSTRIAL ENGINEERING TECH      3.517       3.840                                             4.808
 MECHANICAL ENGINEERING TECH      1.227       1.178                                             1.099
 AIR COND, HEATING, REFRIG       34.592      34.930                                            40.247
 DATA PROCESSING MACHINE REPAIR   8.960      11.030                                            12.775
 HOUSEHOLD APPLIANCE MECHAN      18.841      17.080                                            16.071
 OFFICE MACHINE REPAIRERS         9.764      11.112                                            12.225

TOTALS                          100.000     100.000                                           100.000
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 OCCUPATION TITLE               BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES       ED
 ELECTRICAL, ELECTRONIC TECH    10030200 153   3.151  -0.000 5317 5310 -0.000000 -0.000000 32
 INDUSTRIAL ENGINEERING TECH    10030250 154  12.257  -0.000 5312    0 -0.000000 -0.000000 32
 MECHANICAL ENGINEERING TECH    10040350 155   7.191  -0.000 5315    0 -0.000000 -0.000000 32
 AIR COND, HEATING, REFRIG      50390350 470 637.281  -0.000   -0    0 17.013100 17.010200 30
 DATA PROCESSING MACHINE REPAI  50330350 475 629.281  -0.000   -0    0 16.310800 -0.000000 30
 HOUSEHOLD APPLIANCE MECHAN     50390500 482 827.281  -0.000   -0    0 17.020000 -0.000000 30
 OFFICE MACHINE REPAIRERS       50330500 484 633.281  -0.000   -0    0 17.060000 -0.000000 30

 LFS = LABOR FORCE SEPARATION
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                    [illegible] EMPLOYMENT DATA

CLUSTER NO.  3 - BUILDING CONSTRUCTION AND MAINTENANCE

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                                     NO. EMPLOYED          CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                    1974        1985         NOS.      PERCENT      GROWTH       LFS     GROWTH + LFS

   CONSTRUCTION INSPECTOR, PUB     373.000     404.000      31.000       8.300       3.000      23.000      26.000
   MGRS, SUPERINTENDANTS, BLDG    1798.000    2395.000     597.000      33.200      54.000     120.000     174.000
   CONSTRUCTION CRAFTS WORKERS   73921.000   85479.000   11558.000      15.600    1051.000    1721.000    2772.000
   BLUE COLLAR WRKS SUPVR NEC    35165.000   37423.000    2258.000       6.400     205.000     900.000    1105.000
   CABINETMAKERS                  1650.000    1489.000    -161.000      -9.800     -15.000      45.000      30.000
   CARPET INSTALLERS              1260.000    1398.000     138.000      11.000      13.000      13.000      26.000
   CRANE,DERRICK,AND HOIST OPR    4590.000    4355.000    -235.000      -4.600     -21.000      97.000      76.000
   FURNITURE AND WOOD FINISHER     512.000     436.000     -76.000     -14.800      -7.000      18.000      11.000
   GLAZIERS                        745.000     981.000     236.000      31.700      21.000      20.000      42.000
   STONE CUTTERS, STONE CARVERS     92.000      97.000       5.000       5.400       0.000       2.000       2.000
   ASBESTOS, INSULATION WORKERS    718.000    1018.000     300.000      41.800      27.000      11.000      38.000
   DRILLERS,EARTH                  344.000     371.000      27.000       7.800       2.000       8.000      11.000
   DRY WALL INSTALLERS, LATHES    1487.000    1593.000     106.000       7.100      10.000      17.000      27.000
   FILER,POLISHER,SANDER,BUFFER   1681.000    1607.000     -74.000      -4.400      -7.000      47.000      40.000
   MIXING OPERATIVES              2306.000    2186.000    -120.000      -5.200     -11.000      43.000      32.000
   RIVETERS AND FASTENERS          422.000     404.000     -18.000      -4.300      -2.000      13.000      12.000
   SAWYERS                         869.000     856.000     -13.000      -1.500      -1.000      20.000      19.000
   CARPENTERS HELPERS             2126.000    2013.000    -113.000      -5.300     -10.000      33.000      23.000
   CONSTR LABR,EXC CARPENTER HEL 14904.000   14978.000      74.000        .500       7.000     341.000     348.000
TOTALS                          145363.000  159883.000   14520.000       9.989    1319.000    3492.000    4814.000

   GRAND TOTALS                  1993438.0   2193117.0    199679.0                       10.1     18153.0       82298.0       100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   CONSTRUCTION INSPECTOR, PUB    .0186057    .0185057                                                       .0250812
   MGRS, SUPERINTENDANTS, BLDG    .0901597    .1097055                                                       .1732050
   CONSTRUCTION CRAFTS WORKERS   3.7269126   3.9154567                                                      2.7593347
   BLUE COLLAR WRKS SUPVR NEC    1.7729316   1.7142034                                                      1.0999512
   CABINETMAKERS                  .0831469    .0682052                                                       .0298629
   CARPET INSTALLERS              .0635261    .0640369                                                       .0250812
   CRANE,DERRICK,AND HOIST OPR    .2566251    .2223334                                                       .0756528
   FURNITURE AND WOOD FINISHER    .0258134    .0199714                                                       .0109497
   GLAZIERS                       .0375610    .0449356                                                       .0410081
   STONE CUTTERS, STONE CARVERS   .0046384    .0044432                                                       .0019909
   ASBESTOS, INSULATION WORKERS   .0361993    .0466306                                                       .0370264
   DRILLERS,EARTH                 .0173436    .0169941                                                       .0109497
   DRY WALL INSTALLERS, LATHES    .0749730    .0729691                                                       .0268766
   FILER,POLISHER,SANDER,BUFFER   .0847314    .0736133                                                       .0398172
   MIXING OPERATIVES              .1162528    .1001321                                                       .0318538
   RIVETERS AND FASTENERS         .0212762    .0185057                                                       .0119452
   SAWYERS                        .0438126    .0392100                                                       .0189132
   CARPENTERS HELPERS             .1071876    .0922076                                                       .0220949
   CONSTR LABR,EXC CARPENTER HEL  .7463033    .6915026                                                       .3464100

TOTALS                           7.3234421   7.3236111                                                      4.7920047

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  CONSTRUCTION INSPECTOR, PUB        .257        .253                                                          .540
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                                  [illegible] EMPLOYMENT DATA
CLUSTER NO.  3 - BUILDING CONSTRUCTION AND MAINTENANCE                                                        (CONTINUED)

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                                         NO. EMPLOYED          CHANGE FROM 74 TO 85       AV. ANNUAL JOB OPENINGS DUE TO:
                                         1974      1985          NOS.       PERCENT       GROWTH      LFS      GROWTH + LFS

  MGRS. SUPERINTENDANTS. BLDG            1.237     1.498                                                          3.614
  CONSTRUCTION CRAFTS WORKERS           53.353    53.463                                                         57.582
  BLUE COLLAR WRKS SUPVR NEC            24.191    23.496                                                         22.954
  CABINETMAKERS                          1.135      .931                                                           .623
  CARPET INSTALLERS                       .367      .474                                                           .540
  CRANE,DERRICK,AND HOIST OPR            3.532     3.337                                                          1.579
  FURNITURE AND WOOD FINISHER             .352      .273                                                           .224
  GLAZIERS                                .513      .614                                                           .872
  STONE CUTTERS, STONE CARVERS            .353      .361                                                           .042
  ASBESTOS. INSULATION. WORKERS           .434      .537                                                           .769
  DRILLERS,EARTH                          .237      .232                                                           .229
  DRY WALL INSTALLERS, LATHES            1.323      .996                                                           .561
  FILER,POLISHER,SANDER,BUFFER           1.156     1.065                                                           .831
  MIXING OPERATIVES                      1.596     1.367                                                           .665
  RIVETERS AND FASTENERS                  .292      .253                                                           .249
  SAWYERS                                 .593      .535                                                           .395
  CARPENTERS HELPERS                     1.493     1.259                                                           .478
  CONSTR LABR,EXC CARPENTER HELP        10.134     9.306                                                          7.229

TOTALS                                 100.000   100.000                                                        100.000

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  OCCUPATION TITLE                      BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES       ED
  CONSTRUCTION INSPECTOR, PUB           20040100 213 166.000   -0.000     -0       0 17.269900 -0.000000 31
  MGRS, SUPERINTENDANTS, BLDG           29050100 216 187.168   -0.000     -0       0 -0.000000 -0.000000 99
  CONSTRUCTION CRAFTS WORKERS           50020000   0  -0.000   -0.000     -0      -0 -0.000000 -0.000000 -0
  BLUE COLLAR WRKS SUPVR NEC            50040000 441  -0.000   -0.000     -0       0 -0.000000 -0.000000 99
  CABINETMAKERS                         50140100 413 660.280   -0.000     -0       0 17.360100 -0.000000 30
  CARPET INSTALLERS                     50140150 420 299.381   -0.000     -0       0 17.109900 -0.000000 30
  CRANE,DERRICK,AND HOIST OPR           50140200 424 921.000   -0.000     -0       0 17.100302 -0.000000 20
  FURNITURE AND WOOD FINISHER           50140350 443 763.381   -0.000     -0       0 17.360100 -0.000000 30
  GLAZIERS                              50140400 445 865.781   -0.000     -0       0 17.100900 -0.000000 30
  STONE CUTTERS, STONE CARVERS          50141050 546 771.281   -0.000     -0       0 -0.000000 -0.000000 99
  ASBESTOS. INSULATION WORKERS          51080350 601 863.884   -0.000     -0       0 17.109900 -0.000000 30
  DRILLERS,EARTH                        51080450 614  -0.000   -0.000     -0       0 -0.000000 -0.000000 99
  DRY WALL INSTALLERS, LATHES           51080500 615 842.000   -0.000     -0       0 17.100600 17.100800 30
  FILER,POLISHER,SANDER,BUFFER          51090500 621 705.884   -0.000     -0       0 17.239900 -0.000000 20
  MIXING OPERATIVES                     51080950 641 550.885   -0.000     -0       0 -0.000000 -0.000000 30
  RIVETERS AND FASTENERS                51091150 650  -0.000   -0.000     -0       0 -0.000000 -0.000000 99
  SAWYERS                               51091250 662 667.000   -0.000     -0       0 17.369900 -0.000000 20
  CARPENTERS HELPERS                    80000100 750 869.000   -0.000     -0       0 17.100100 -0.000000 20
  CONSTR LABR,EXC CARPENTER HEL         40000150 751  -0.000   -0.000     -0       0 -0.000000 -0.000000 99

LFS = LABOR FORCE SEPARATION
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                      [illegible] EMPLOYMENT DATA

CLUSTER NO.  4 - COMMUNICATIONS

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                                          NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                         1974      1985        NOS.        PERCENT     GROWTH      LFS      GROWTH + LFS

   RADIO OPERATORS                     730.000    796.000     66.000       9.200        6.000     22.000      28.000
   EDITORS AND REPORTERS              3985.000   4372.000    387.000      22.300       81.000    168.000     249.000
   PUBLIC RELATIONS SPECIALIST        2332.000   2626.000    294.000      12.500       27.000     85.000     112.000
   RADIO, TV ANNOUNCERS                244.000    243.000     -1.000       -.400        0.000      2.000       2.000
   RADIO, TELEVISION REPAIRERS        2803.000   3445.000    642.000      22.900       58.000     57.000     115.000
   PRINTING TRADE CRAFTS WRKRS       13240.000  12062.000  -1178.000      -8.900     -107.000    321.000     214.000
   SIGN PAINTERS AND LETTERERS         447.000    432.000    -15.000      -3.466       -1.000     16.000      15.000
 TOTALS                              23771.000  24466.000    695.000       2.924       64.000    671.000     735.000

   GRAND TOTALS                      1989438.0  2183117.0   193679.0                           10.1    18153.0    82296.8     100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   RADIO OPERATORS                    .0363335   .0366036
   EDITORS AND REPORTERS              .2003133   .2231672                                                  .0278721
   PUBLIC RELATIONS SPECIALIST        .1175736   .1202467                                                  .2478623
   RADIO, TV ANNOUNCERS               .0123119   .0111309                                                  .1114083
   RADIO, TELEVISION REPAIRERS        .1413203   .1578019                                                  .0019989
   PRINTING TRADE CRAFTS WRKRS        .6675278   .5525128                                                  .1144746
   SIGN PAINTERS AND LETTERERS        .0225366   .0197887                                                  .2130222
                                                                                                           .0149315
 TOTALS                              1.1954746  1.1206912
                                                                                                          .7316418
  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  RADIO OPERATORS                        3.329      3.283
  EDITORS AND REPORTERS                 16.764     19.313                                                    3.810
  PUBLIC RELATIONS SPECIALIST            9.810     10.733                                                   33.878
  RADIO, TV ANNOUNCERS                   1.026       .993                                                   15.238
  RADIO, TELEVISION REPAIRERS           11.792     14.081                                                     .272
  PRINTING TRADE CRAFTS WRKRS           55.693     49.301                                                   15.646
  SIGN PAINTERS AND LETTERERS            1.880      1.766                                                   29.116
                                                                                                             2.041
 TOTALS                                100.000    100.000
                                                                                                           100.000
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  OCCUPATION TITLE                   BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES     ED
  RADIO OPERATORS                    10140250 171 193.282   -0.000    -0     0 -0.000000 -0.000000 -0
  EDITORS AND REPORTERS              10220300 184 132.068   -0.000   602     0 -0.000000 -0.000000 40
  PUBLIC RELATIONS SPECIALIST        10220500 192 165.068   -0.000    -0     0 -0.000000 -0.000000 40
  RADIO, TV ANNOUNCERS               10221650 193 159.148   -0.000   603     0 -0.000000 -0.000000 21
  RADIO, TELEVISION REPAIRERS        50540850 485 720.281   -0.000    -0     0 17.159300 -0.000000 30
  PRINTING TRADE CRAFTS WRKRS        50100000   0  -0.000   -0.000    -0    -0 -0.000000 -0.000000 -0
  SIGN PAINTERS AND LETTERERS        50140350 543 970.381   -0.000    -0     0 17.073000 -0.000000 30

 LFS = LABOR FORCE SEPARATION
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CLUSTER NO. 8 - PERSONAL SERVICES

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                                    NO. EMPLOYED          CHANGE FROM 74 TO 85       AV. ANNUAL JOB OPENINGS DUE TO:
                                   1974        1985          NOS.      PERCENT      GROWTH       LFS       GROWTH + LFS

  EMBALMERS                       19.000      21.000        2.000      10.500        0.000       1.000        1.000
  FUNERAL DIRECTORS              411.000     398.000      -13.000      -1.400       -1.000      36.000       35.000
  BAKERS                        3913.000    3354.000     -559.000     -14.300      -51.000     133.000       82.000
  DECORATORS, WINDOW DRESSERS   1724.000    1894.000      170.000       9.900       15.000      79.000       94.000
  SHOE REPAIRERS                 797.000     627.000     -170.000     -21.300      -15.000      46.000       31.000
  UPHOLSTERERS                  1115.000    1078.000      -37.000      -3.300       -3.000      38.000       35.000
  SERVICE WORKERS             (238094.000)(274236.000)  36142.000      15.200     3286.000   14014.000    17300.000
 -HEALTH SERVICE WORKERS      ( 33118.000)( 48777.000)  15659.000      47.300     1424.000    2603.000     4027.000
  ANIMAL CARETAKERS, EXC FARM   1651.000    2825.000     1174.000      71.100      107.000      84.000      191.000
TOTALS                        215106.000  236156.000    21050.000       9.780     1914.000   11829.000    13742.000

  GRAND TOTALS                 1963473.0   2163117.0     199674.0                          10.1      19153.0      82298.0        100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  EMBALMERS                     .0009679    .0009619                                                        .0009956
  FUNERAL DIRECTORS             .0459303    .0411338                                                        .0340401
  BAKERS                        .1972837    .1536335                                                        .0816253
  DECORATORS, WINDOW DRESSERS   .0869198    .0867567                                                        .0935705
  SHOE REPAIRERS                .0401328    .0287284                                                        .0308584
  UPHOLSTERERS                  .0562155    .0493709                                                        .0348401
  SERVICE WORKERS   10.334   [illegible] [illegible]   10.327                                        17.2239550
  ANIMAL CARETAKERS, EXC FARM   .0832393    .1294321                                                        .1901273

TOTALS               10.8451   [illegible] [illegible]   10.8173                                        17.6878129

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 EMBALMERS                         .009        .009                                                         .007
 FUNERAL DIRECTORS                 .424        .383                                                         .255
 BAKERS                           1.819       1.420                                                         .597
 DECORATORS, WINDOW DRESSERS       .801        .802                                                         .684
 SHOE REPAIRERS                    .371        .266                                                         .226
 UPHOLSTERERS                      .518        .456                                                         .255
 SERVICE WORKERS     95.59   [illegible]   [illegible]      95.670                                       125.891
 ANIMAL CARETAKERS, EXC FARM       .768       1.196                                                        1.390

TOTALS                          100.000     100.000                                                      100.000
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 OCCUPATION TITLE                BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
 EMBALMERS                       10140157 165 338.381  -0.000    -0     0  7.090400 -0.000000 31
 FUNERAL DIRECTORS               20260350 211 187.168  -0.000    -0     0  4.150600 -0.000000 49
 BAKERS                          50140350 402 526.781  -0.000    -0     0 17.290100 -0.000000 30
 DECORATORS, WINDOW DRESSERS     50140257 425 298.000  -0.000    -0     0  4.010000 -0.000000 30
 SHOE REPAIRERS                  52140010 542 365.361  -0.000    -0     0 17.340236 -0.000000 34
 UPHOLSTERERS                    50140150 563 780.381  -0.000    -0     0 17.350000 -0.000000 33
 SERVICE WORKERS                 70000000   0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
 HEALTH SERVICE WORKERS          73690000   0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
 ANIMAL CARETAKERS, EXC FARM     80300050 740 356.000  -0.000    -0     0  1.990000 -0.000000 26

LFS = LABOR FORCE SEPARATION
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                    PHILADELPHIA 74-85 EMPLOYMENT DATA

CLUSTER NO.  - - METAL PROCESSING

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                                      NO. EMPLOYED          CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                     1974        1985        NOS.       PERCENT       GROWTH      LFS      GROWTH + LFS

   METALWORKING CRAFT WRKRS, EXC  28621.000   28574.000     -47.000      -.203      -4.000    575.000    570.000
   AUTO BODY REPAIRERS             3119.000    3267.000     148.000      4.730      13.000     35.000     49.000
   SEMISKILLED METALWORKING       34056.000   33951.000    -105.000      -.300     -10.000    717.000    708.000
TOTALS                            65796.000   65792.000      -4.000      -.006      -1.000   1327.000   1327.000

   GRAND TOTALS                   1983438.0   2183117.0    199679.0                    10.1    18163.0     82296.0        100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   METALWORKING CRAFT WRKRS, EXC  1.4429995   1.3088625                                                   .5673457
   AUTO BODY REPAIRERS             .1572522    .1496484                                                   .0487761
   SEMISKILLED METALWORKING       1.7170196   1.5551617                                                   .7047651

TOTALS                            3.3172703   3.0135727                                                  1.3209369

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  METALWORKING CRAFT WRKRS, EXC      43.500      43.431                                                    42.954
  AUTO BODY REPAIRERS                 4.740       4.966                                                     3.693
  SEMISKILLED METALWORKING           51.760      51.604                                                    53.353

TOTALS                              100.000     100.000                                                   100.000
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  OCCUPATION TITLE                BLS CODE GEN OCCUPATION CODES REGIS CODES VOC-ED CODES      ED
  METALWORKING CRAFT WRKRS, EXC   50650000   0  -0.000   -0.000   -0   -0 -0.000000 -0.000000 -0
  AUTO BODY REPAIRERS             50080200 472 807.381   -0.000   -0    0 17.030100 -0.000000 30
  SEMISKILLED METALWORKING        51920000   0  -0.000   -0.000   -0   -0 -0.000000 -0.000000 -0

LFS = LABOR FORCE SEPARATION
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                 PHILADELPHIA [illegible] EMPLOYMENT DATA

CLUSTER NO.  7 - BUSINESS DATA PROCESSING

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                                 NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                               1974        1985        NOS.       PERCENT      GROWTH       LFS      GROWTH + LFS

   TOOL PROGRAMMERS, NUMERICAL     81.000     108.000     27.000     33.300      2.000      2.000       4.000
   COMPUTER SPECIALISTS          9999.000   12561.000   2562.000     25.600    233.000    214.000     447.000
   OFFICE MACHINE OPERATORS     20728.000   19372.000  -1356.000     -6.200    -96.000    889.000     793.000
   BOOKKEEPERS                  38033.000   37890.000   -143.000      -.400    -13.000   2149.000    2136.000
TOTALS                          68841.000   69931.000   1090.000      2.328    126.000   3254.000    3380.000

   GRAND TOTALS                 1983438.0   2183117.0   199679.0                  10.1    14193.0     82299.0       100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   TOOL PROGRAMMERS, NUMERICAL  .0040839    .0049471                                                 .0039817
   COMPUTER SPECIALISTS         .5041247    .5753700                                                 .4449576
   OFFICE MACHINE OPERATORS    1.0450384    .8873551                                                 .7693766
   BOOKKEEPERS                 1.9175231   1.7355918                                                2.1262486

TOTALS                         3.4708664   3.2032648                                                3.3449567

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  TOOL PROGRAMMERS, NUMERICAL      .118       .154                                                      .118
  COMPUTER SPECIALISTS           14.525     17.962                                                    13.225
  OFFICE MACHINE OPERATORS       30.110     27.702                                                    23.462
  BOOKKEEPERS                    55.248     54.182                                                    63.195

TOTALS                          100.000    100.000                                                   100.000

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  OCCUPATION TITLE              BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
  TOOL PROGRAMMERS, NUMERICAL   13143000 172   7.197  -0.000    -0     0 16.011300 -0.000000 32
  COMPUTER SPECIALISTS          10160000   0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
  OFFICE MACHINE OPERATORS      40340000   0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
  BOOKKEEPERS                   41350100 305 210.388  -0.000    -0     0 14.010200 -0.000000 01

LFS = LABOR FORCE SEPARATION
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[illegible]

CLUSTER NO.  5 - SECRETARIAL

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                                        NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                      1974        1985         NOS.       PERCENT      GROWTH      LFS      GROWTH + LFS

  STENOGRAPHERS,TYPISTS,SECRE     125462.000 163265.000  34433.000     27.339     3128.030  10241.000  13369.000
TOTALS                            125402.000 163265.000  34433.000     27.134     3128.003  10241.000  13369.003

  GRAND TOTALS                    1883433.5  2157117.6   199674.3                        10.1      18153.0      82290.0        100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  STENOGRAPHERS,TYPISTS,SECRE     5.3454443  7.3411391                                              13.3079167

TOTALS                            5.3455443  7.3411391                                              13.3079167

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 STENOGRAPHERS,TYPISTS,SECRE       100.000    100.000                                                 100.000

TOTALS                             100.000    100.000                                                 100.000

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 OCCUPATION TITLE                 BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES     ED
 STENOGRAPHERS,TYPISTS,SECRE      43020393   0  -0.000  -0.030   -0    -0 -0.000000 -0.000000 -0

LFS = LABOR FORCE SEPARATION
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CLUSTER NO.  9 - DISTRIBUTION

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                                 NO. EMPLOYED          CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                               1974          1985       NOS.        PERCENT     GROWTH      LFS      GROWTH + LFS

  DISPATCHER, STARTER, VEHICLE  2312.000    2682.000    370.000      16.000      34.000     66.000     100.000
  EXPEDITORS, PROD CONTROLLERS  7337.000    7979.000    642.000       8.800      58.000    182.000     241.000
  STOCK CLERKS, STORE KEEPERS  13396.000   14241.000    845.000       6.600      80.000    418.000     499.000
  FREIGHT, MATERIAL HANDLERS   16968.000   16447.000   -521.000      -3.100     -47.000    313.000     266.000
  LONGSHORE WORKERS, STEVEDORES 1826.000    1708.000   -118.000      -6.500     -11.000     52.000      42.000
  STOCK HANDLERS               15536.000   16102.000    566.000       3.600      51.000    301.000     353.000
TOTALS                         57375.000   59159.000   1784.000       3.191     165.000   1332.000    1501.000

  GRAND TOTALS                1983434.0   2193117.0   193673.0                   10.1     18153.3      82298.3        100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  DISPATCHER, STARTER, VEHICLE  .1165553    .1222519                                                   .0995431
  EXPEDITORS, PROD CONTROLLERS  .3699133    .3654366                                                   .2398989
  STOCK CLERKS, STORE KEEPERS   .6753762    .6523242                                                   .4967201
  FREIGHT, MATERIAL HANDLERS    .8554943    .7533724                                                   .2647846
  LONGSHORE WORKERS, STEVEDORES .0920624    .0782360                                                   .0418081
  STOCK HANDLERS                .7832864    .7375693                                                   .3513871

TOTALS                         2.8906973   2.7093410                                                  1.4941419

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 DISPATCHER, STARTER, VEHICLE      4.032       4.534                                                      6.662
 EXPEDITORS, PROD CONTROLLERS     12.787      13.487                                                     16.056
 STOCK CLERKS, STORE KEEPERS      23.349      24.072                                                     33.245
 FREIGHT, MATERIAL HANDLERS       29.574      27.801                                                     17.722
 LONGSHORE WORKERS, STEVEDORES     3.183       2.887                                                      2.798
 STOCK HANDLERS                   27.077      27.218                                                     23.518

TOTALS                           100.000     100.000                                                    100.000

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  OCCUPATION TITLE              BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
 DISPATCHER, STARTER, VEHICLE   40061450 315  -0.000  -0.000    -0     0 -0.000000 -0.000000 99
 EXPEDITORS, PROD CONTROLLERS   40068600 323 221.000 222.000    -0     0 14.050100 14.050300 20
 STOCK CLERKS, STORE KEEPERS    40061350 341 223.367  -0.000    -0     0 14.050400 -0.000000 20
 FREIGHT, MATERIAL HANDLERS     40007250 753 222.667  -0.000    -0     0 14.050300 -0.000000 20
 LONGSHORE WORKERS, STEVEDORES  40000400 760 911.000 922.000    -0     0 -0.000000 -0.000000 99
 STOCK HANDLERS                 40007500 762 422.887  -0.000    -0     0  4.200000 -0.000000 20

LFS = LABOR FORCE SEPARATION
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CLUSTER NO. 1, - CLERICAL

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                                      NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                    1974        1985         NOS.       PERCENT     GROWTH      LFS      GROWTH + LFS

  OTHER CLERICAL WORKERS        (259805.000 302620.000) 42815.000    16.500    3892.000  13518.000  17411.000
 -BOOKKEEPERS                  ( 35633.000  35490.000 )  -143.000     -.400     -13.000   2149.000   2136.000
 -DISPATCHER, STARTER, VEHICLE(   2312.000   2682.000 )   370.000    16.000      34.000     66.000    100.000
 -EXPEDITORS, PROD CONTROLLERS(   7337.000   7979.000 )   642.000     8.800      58.000    182.000    241.000
 -STOCK CLERKS, STORE KEEPERS  ( 13356.000  14241.000 )   885.000     6.600      84.000    415.000    499.000
TOTALS                          195767.000 239828.000  41351.000    23.058    3733.000  10703.000  14435.000

  GRAND TOTALS                  1913433.0  2103117.0  189679.0                     10.1      18153.0      82296.0      100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  OTHER CLERICAL WORKERS 10.02134              10.78558                              17.3314487

TOTALS                   10.02134              10.78558                              17.3314487
                         10.02134
 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 OTHER CLERICAL WORKERS            100.000    100.000                                      120.617

TOTALS                             100.000    100.000                                      100.000
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 OCCUPATION TITLE                  BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES       ED
 OTHER CLERICAL WORKERS            +0059000   0  -0.000  -0.000   -0    -0 -0.000000 -0.000000 -0
 BOOKKEEPERS                       +0060150 305 219.388  -0.000   -0     0 14.010200 -0.000000 31
 DISPATCHER, STARTER, VEHICLE      +0060450 315  -0.000  -0.000   -0     0 -0.000000 -0.000000 99
 EXPEDITORS, PROD CONTROLLERS      +0062600 323 221.000 222.000   -0     0 14.050100 14.050300 20
 STOCK CLERKS, STORE KEEPERS       +0061350 381 223.387  -0.000   -0     0 14.050400 -0.000000 20

LFS = LABOR FORCE SEPARATION
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                    PHILADELPHIA 74-85 EMPLOYMENT DATA

   CLUSTER NO. 11 - HEALTH SERVICES
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                                                         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                   NO. EMPLOYED            NOS.      PERCENT      GROWTH      LFS      GROWTH + LFS
                                   1974       1985
                                                                                  1321.000   2529.000   3849.000
                                                          14529.000   34.100       482.000    734.000   1216.000
   MEDICAL WORKERS, EXC TECH     42573.000  57106.000     5333.000    55.200        71.000    143.000    214.000
   HEALTH TECHNOL AND TECH        9605.000  14938.000      783.000    24.500         3.000     32.000     35.000
   HEALTH ADMINISTRATORS          3195.000   3978.000       32.000     3.700        48.000     33.000     90.000
   DENTAL LABORATORY TECH          875.000    907.000      527.000    52.200      1424.000   2603.000   4027.000
   OPTICIANS, LENS GRINDR, POLIS  1009.000   1536.000    15659.000    47.300      3349.000   6074.000   9421.000
   HEALTH SERVICE WORKERS        33118.000  48777.000    36832.000    40.752
 TOTALS                          90380.000 127212.000                             16.1    13153.0    82298.0        180459.0

   GRAND TOTALS                 1983438.0  2183117.0    199679.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS                                                 3.8314130
   MEDICAL WORKERS, EXC TECH      2.1466756  2.6156012                                            1.2104441
   HEALTH TECHNOL AND TECH         .4842632   .6823758                                             .2130222
   HEALTH ADMINISTRATORS           .1610339   .1822165                                             .0348401
   DENTAL LABORATORY TECH          .0441153   .0415461                                             .0796345
   OPTICIANS, LENS GRINDR, POLIS   .0508713   .0703581                                            4.0086005
   HEALTH SERVICE WORKERS         1.6697270  2.2342625
                                                                                                  9.3779552
 TOTALS                           4.5567342  5.8273812

   CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS                                                 40.856
   MEDICAL WORKERS, EXC TECH         47.113     44.893                                              12.907
   HEALTH TECHNOL AND TECH           10.627     11.719                                               2.272
   HEALTH ADMINISTRATORS              3.535      3.127                                                .372
   DENTAL LABORATORY TECH              .968       .713                                                .849
   OPTICIANS, LENS GRINDR, POLISH     1.116      1.207                                              42.745
   HEALTH SERVICE WORKERS            36.643     38.343
                                                                                                   100.000
 TOTALS                             100.000    100.000
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   OCCUPATION TITLE               BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES
   MEDICAL WORKERS, EXC TECH      10190000   0   -0.000    -0.000    -0     -0 -0.000000 -0.000000 -0
   HEALTH TECHNOL AND TECH        10120000   0   -0.000    -0.000    -0     -0 -0.000000 -0.000000 -0
   HEALTH ADMINISTRATORS          20040150 212  187.000    -0.000  1202      0 -0.000000 -0.000000 51
   DENTAL LABORATORY TECH         50140300 424  712.301    -0.000    -0      0  7.010300 -0.000000 30
   OPTICIANS, LENS GRINDR, POLIS  50140750 505  713.300    -0.000    -0      0 17.210100 -0.000000 30
   HEALTH SERVICE WORKERS         70060100   0   -0.000    -0.000    -0     -0 -0.000000 -0.000000 -0

 LFS = LABOR FORCE SEPARATION
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[illegible]

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CLUSTER NO. 12 - APPAREL TRADE

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                                      NO. EMPLOYED          CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                    1974        1985          NOS.       PERCENT     GROWTH       LFS     GROWTH + LFS

    LOOM FIXERS                   165.000     119.000      -46.000      -27.900      -4.000      5.000       1.000
    TAILORS                      3209.000    2411.000     -798.000      -24.900     -73.000    132.000      60.000
    SEMISKILLED TEXTILE          6647.000    3168.000    -3479.000      -52.300    -316.000    231.000     -85.000
    CLOTHING IRONERS AND PRESSER 5244.000    3718.000    -1526.000      -29.100    -139.000    215.000      76.000
    CUTTING OPERATIVES, NEC      8015.000    7453.000     -562.000       -7.000     -51.000    256.000     205.000
    DRESSMAKERS, EXC FACTORY     2744.000    2181.000     -563.000      -20.500     -51.000    187.000     136.000
    DYERS                         622.000     464.000     -158.000      -25.400     -14.000     13.000      -2.000
    LAUNDRY,DRY CLEANING OPRS, NE 3525.000   3535.000       10.000         .300       1.000    183.000     184.000
    MILLINERS                      50.000      28.000      -22.000      -44.000      -2.000      3.000       1.000
    SEWERS AND STITCHERS        27170.000   21142.000    -6028.000      -22.200    -548.000   1400.000     852.000
  TOTALS                        57391.000   44219.000   -13172.000      -22.951   -1197.000   2625.000    1428.000

    GRAND TOTALS                1983434.0   2183117.0     199679.0                      10.1     18153.0     82290.0        100459.0

    CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
    LOOM FIXERS                  .0083189    .0054509                                                      .0009954
    TAILORS                      .1617901    .1104384                                                      .0597259
    SEMISKILLED TEXTILE          .3351252    .1451136                                                     -.0846116
    CLOTHING IRONERS AND PRESSER .2643900    .1703070                                                      .0756528
    CUTTING OPERATIVES, NEC      .4040963    .3413926                                                      .2040633
    DRESSMAKERS, EXC FACTORY     .1383456    .0999030                                                      .1353786
    DYERS                        .0313597    .0212540                                                     -.0019909
    LAUNDRY,DRY CLEANING OPRS, NE .1777217   .1619244                                                      .1831593
    MILLINERS                    .0025209    .0012826                                                      .0009954
    SEWERS AND STITCHERS        1.3698437    .9684318                                                      .8481072

  TOTALS                        2.8935112   2.0254484                                                     1.4214754

   CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
   LOOM FIXERS                       .288        .269                                                          .070
   TAILORS                          5.591       5.452                                                         4.202
   SEMISKILLED TEXTILE             11.582       7.164                                                        -5.952
   CLOTHING IRONERS AND PRESSER     9.137       8.408                                                         5.322
   CUTTING OPERATIVES, NEC         13.966      16.855                                                        14.356
   DRESSMAKERS, EXC FACTORY         4.781       4.932                                                         9.524
   DYERS                            1.084       1.049                                                         -.140
   LAUNDRY,DRY CLEANING OPRS, NEC   6.142       7.994                                                        12.885
   MILLINERS                         .087        .063                                                          .070
   SEWERS AND STITCHERS            47.342      47.812                                                        59.664

  TOTALS                          100.000     100.000                                                       100.000
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OCCUPATION TITLE                 BLS CODE CEN OCCUPATION CODES MEGIS CODES VOC-ED CODES       ED
LOOM FIXERS                      56380350 483 683.280  -0.000    -0     0 17.339900 -0.000000 30
TAILORS                          55141100 551 785.000  -0.000    -0     0 17.330200 -0.000000 30
SEMISKILLED TEXTILE              61340000   0  -0.000  -0.000    -0    -0 -0.000000 -0.000000 -0
CLOTHING IRONERS AND PRESSERS    61340300 611 363.884  -0.000    -0     0 17.160000 17.160200 20
CUTTING OPERATIVES, NEC          61360350 612  -0.000  -0.000    -0     0 -0.000000 -0.000000 99
DRESSMAKERS, EXC FACTORY         61380400 613 785.361  -0.000    -0     0  0.020200 -0.000000 34
DYERS                            61380550 621 582.134  -0.000    -0     0 -0.000000 -0.000000 99
LAUNDRY, DRY CLEANING OPRS, NE   61380700 630 361.000 362.000    -0     0 17.160100 17.160200 34
MILLINERS                        61380850 636 784.281  -0.000    -0     0 17.339900 -0.000000 26
SEWERS AND STITCHERS             61381300 663 786.000 787.000    -0     0 17.339900 -0.000000 30

LFS = LABOR FORCE SEPARATION
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                              [illegible]

CLUSTER NO. 13 - DRAFTING

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                                   NO. EMPLOYED          CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                   1974       1985         NOS.       PERCENT      GROWTH      LFS      GROWTH + LFS

  DRAFTERS                       10111.000  12255.000   2144.000     21.200      195.000    153.000     348.000
  SURVEYORS                       1041.000   1443.000    402.000     38.600       37.000     17.000      54.000
  SURVEYOR HELPERS                 215.000    240.000     25.000     11.600        2.000      3.000       5.000
TOTALS                           11367.000  13938.000   2571.000     22.618      234.000    174.000     407.000

  GRAND TOTALS                   1983438.0  2183117.0   199679.0                        10.1      18153.0      82298.0       100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  DRAFTERS                        .5097714   .5613533                                                      .3464106
  SURVEYORS                       .0524846   .0660982                                                      .0537533
  SURVEYOR HELPERS                .0108398   .0109935                                                      .0049772

TOTALS                            .5730958   .6384449                                                      .4051404

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 DRAFTERS                           88.950     87.925                                                        85.504
 SURVEYORS                           9.158     10.353                                                        13.268
 SURVEYOR HELPERS                    1.891      1.722                                                         1.229

TOTALS                             100.000    100.000                                                       100.000
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 OCCUPATION TITLE                  BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
 DRAFTERS                          17030153 152  17.000  -0.000    -0     0 17.130000 -0.000000 32
 SURVEYORS                         16040400 161  16.000  -0.000 5399      0 -0.000000 -0.000000 30
 SURVEYOR HELPERS                  51330250 605  15.000  -0.000    -0     0 -0.000000 -0.000000 30

LFS = LABOR FORCE SEPARATION
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                    [illegible] EMPLOYMENT DATA

CLUSTER NO. 14 - AGRICLUTURE

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                                    NO. EMPLOYED            CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                    1974        1985        NOS.        PERCENT      GROWTH      LFS         GROWTH + LFS

  AGRICULTURAL SCIENTISTS           134.000     127.000     -7.000      -5.200       -1.000      4.000       4.000
  AGRI. BIOLOG TECH EXC HEALTH      863.000     901.000     38.000      4.400        3.000       25.000      28.000
  FARM MANAGEMENT ADVISORS          14.000      10.000      -4.000      -28.600      0.000       0.000       0.000
  FORESTERS, CONSERVATIONISTS       154.000     206.000     52.000      33.800       5.000       3.000       8.000
  MILLERS, GRAIN, FLOUR, FEED       12.000      12.000      0.000       0.000        0.000       0.000       0.000
  SEMISKILLED PACKING, INSPECT      43353.000   44494.000   1141.000    2.600        104.000     1789.000    1892.000
  MEAT CUTTERS,BUTCHERS, EXC MF     5177.000    4798.000    -379.000    -7.300       -34.000     136.000     101.000
  MEAT CUTTERS, BUTCHERS            1566.000    1721.000    155.000     9.900        14.000      45.000      59.000
  FISHERS, HUNTERS AND TRAPPERS     119.000     205.000     86.000      72.300       8.000       3.000       11.000
  FARMERS AND FARM WORKERS          13635.000   10243.000   -3392.000   -24.900      -308.000    417.000     109.000
TOTALS                              65027.000   62717.000   -2310.000   -3.552       -209.000    2422.000    2212.000

  GRAND TOTALS                      1943433.5   2187117.0   133679.5              10.1       18153.0       82290.0          100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  AGRICULTURAL SCIENTISTS           .0067559    .0058174                                                 .0039817
  AGRI. BIOLOG TECH EXC HEALTH      .0435103    .0412713                                                 .0278721
  FARM MANAGEMENT ADVISORS          .0007159    .0004581                                                 0.0000000
  FORESTERS, CONSERVATIONISTS       .0077643    .0094360                                                 .0079634
  MILLERS, GRAIN, FLOUR, FEED       .0006150    .0005497                                                 0.0000000
  SEMISKILLED PACKING, INSPECT      2.1457502   2.0363951                                                1.8833554
  MEAT CUTTERS,BUTCHERS, EXC MF     .2610114    .2197775                                                 .1005385
  MEAT CUTTERS, BUTCHERS            .0789538    .0786322                                                 .0587304
  FISHERS, HUNTERS AND TRAPPERS     .0059397    .0093902                                                 .0109497
  FARMERS AND FARM WORKERS          .6874427    .4691915                                                 .1085020

TOTALS                              3.2784993   2.8723190                                                2.2018933

 CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
 AGRICULTURAL SCIENTISTS                 .206        .202                                                    .181
 AGRI. BIOLOG TECH EXC HEALTH           1.327       1.437                                                   1.266
 FARM MANAGEMENT ADVISORS                .022        .016                                                   0.000
 FORESTERS, CONSERVATIONISTS             .237        .328                                                    .362
 MILLERS, GRAIN, FLOUR, FEED             .018        .019                                                   0.000
 SEMISKILLED PACKING, INSPECT          66.669      70.944                                                  85.533
 MEAT CUTTERS,BUTCHERS, EXC MFG         7.961       7.650                                                   4.566
 MEAT CUTTERS, BUTCHERS                 2.408       2.744                                                   2.667
 FISHERS, HUNTERS AND TRAPPERS           .183        .327                                                    .497
 FARMERS AND FARM WORKERS              20.968      16.332                                                   4.928

TOTALS                                100.000     100.000                                                 100.000
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 OCCUPATION TITLE                BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
 AGRICULTURAL SCIENTISTS         10040050  42  13.000   -0.000  100     0 -0.000000 -0.000000 40
 AGRI. BIOLOG TECH EXC HEALTH    10042050 150  -0.000   -0.000   -0     0 -0.000000 -0.000000 99
 FARM MANAGEMENT ADVISORS        10240300  24  96.126   -0.000  110     0 -0.000000 -0.000000 40
 FORESTERS, CONSERVATIONISTS     10240350  25 441.000   -0.000  114   115 -0.000000 -0.000000 40
 MILLERS, GRAIN, FLOUR, FEED     50140450 [illegible]31 521.000   -0.000   -0     0  1.020200  1.040100 20
 SEMISKILLED PACKING, INSPECT    61060000   0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
 MEAT CUTTERS, BUTCHERS, EXC MF  61300750 631 316.464   -0.000   -0     0 17.290300 -0.000000 30
 MEAT CUTTERS, BUTCHERS          61350900 633 525.381   -0.000   -0     0  1.040100 -0.000000 20
 FISHERS, HUNTERS AND TRAPPERS   80000200 752 430.000  450.000   -0     0  1.060400 17.390000 20
 FARMERS AND FARM WORKERS        80000000   0  -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0

LFS = LABOR FORCE SEPARATION
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                    [illegible] EMPLOYMENT DATA

CLUSTER NO. 15 - TRANSPORTATION (MSS)

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                                    NO. EMPLOYED          CHANGE FROM 74 TO 85    AV. ANNUAL JOB OPENINGS DUE TO:
                                   1974        1985         NOS.       PERCENT      GROWTH       LFS      GROWTH + LFS

   AIRPLANE PILOTS               730.000     892.000     162.000      22.200      15.000      7.000      22.000
   AIR TRAFFIC CONTROLLERS       127.000     130.000       3.000       2.400       0.000      2.000       2.000
   FLIGHT ENGINEERS              115.000     133.000      18.000      15.700       2.000      1.000       3.000
   OFFICERS, PILOTS, PURSERS, SH 572.000     609.000      37.000       6.500       3.000     15.000      19.000
   RAILROAD CONDUCTORS          1195.000    1347.000     152.000      12.700      14.000     33.000      46.000
   RAILROAD, CAR SHOP REPAIRERS  796.000     718.000     -78.000      -9.800      -7.000     20.000      13.000
   LOCOMOTIVE ENGINEERS          744.000     839.000      95.000      12.800       9.000     26.000      35.000
   LOCOMOTIVE ENGINEER HELPERS   111.000      51.000     -60.000     -54.100      -5.000      2.000      -4.000
   SAILORS AND DECKHANDS         674.000     545.000    -129.000     -19.100     -12.000      9.000      -3.000
   TRANSPORT EQUIPMENT OPERATIVE 73429.000  77372.000    3943.000       5.400     356.000   1525.000    1884.000
   TEAMSTERS                      24.000      27.000       3.000      12.500       0.000      0.000       1.000
TOTALS                         78517.000   82663.000    4146.000       5.280     377.000   1641.000    2018.000

   GRAND TOTALS                1983424.0   2183117.0    199679.0                         10.1     18153.0     82298.0        100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   AIRPLANE PILOTS              .0368045    .0408590                                                  .0218995
   AIR TRAFFIC CONTROLLERS      .0064030    .0059548                                                  .0019909
   FLIGHT ENGINEERS             .0057980    .0060922                                                  .0029863
   OFFICERS, PILOTS, PURSERS, SH .0288388   .0278959                                                  .0189132
   RAILROAD CONDUCTORS          .0602489    .0617004                                                  .0457898
   RAILROAD, CAR SHOP REPAIRERS .0401323    .0328888                                                  .0129486
   LOCOMOTIVE ENGINEERS         .0375106    .0384313                                                  .0348401
   LOCOMOTIVE ENGINEER HELPERS  .0055963    .0023361                                                 -.0039817
   SAILORS AND DECKHANDS        .0339814    .0249643                                                 -.0029863
   TRANSPORT EQUIPMENT OPERATIVE 3.7021071  3.5441169                                                 1.8753920
   TEAMSTERS                    .0012100    .0012368                                                  .0009954

TOTALS                         3.9586314   3.7864658                                                 2.0087797

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  AIRPLANE PILOTS                   .931       1.079                                                     1.090
  AIR TRAFFIC CONTROLLERS           .162        .157                                                      .099
  FLIGHT ENGINEERS                  .146        .161                                                      .149
  OFFICERS, PILOTS, PURSERS, SHI    .729        .737                                                      .942
  RAILROAD CONDUCTORS              1.522       1.630                                                     2.279
  RAILROAD, CAR SHOP REPAIRERS     1.014        .869                                                      .644
  LOCOMOTIVE ENGINEERS              .948       1.015                                                     1.734
  LOCOMOTIVE ENGINEER HELPERS       .141        .062                                                     -.198
  SAILORS AND DECKHANDS             .858        .659                                                     -.149
  TRANSPORT EQUIPMENT OPERATIVES  93.520      93.599                                                    93.360
  TEAMSTERS                         .031        .033                                                      .050

TOTALS                           100.000     100.000                                                   100.000
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 CLUSTER ... 25 - [illegible]                                                                                           CONTINUED
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 OCCUPATION TITLE                           BLS CODE CEN OCCUPATION CODES MEGIS CODES VOC-ED CODES       ED
 AIRPLANE PILOTS                            10140350 163 196.263   -0.000 5312      0 -0.000000 -0.000000 50
 AIR TRAFFIC CONTROLLERS                    10140310 164 193.168   -0.000   -0      0 17.040300 -0.000000 30
 FLIGHT ENGINEERS                           10140200 173 621.281   -0.000   -0      0 17.040200 -0.000000 33
 OFFICERS, PILOTS, PURSERS, SH              20360200 226 197.133   -0.000   -0      0 -0.000000 -0.000000 99
 RAILROAD CONDUCTORS                        20360300 226 198.168   -0.000   -0      0 -0.000000 -0.000000 99
 RAILROAD, CAR SHOP REPAIRERS               50332700 486 622.381   -0.000   -0      0 -0.000000 -0.000000 99
 LOCOMOTIVE ENGINEERS                       60120100 455 910.363   -0.000   -0      0 -0.000000 -0.000000 99
 LOCOMOTIVE ENGINEER HELPERS                60120150 456 910.363   -0.000   -0      0 -0.000000 -0.000000 99
 SAILORS AND DECKHANDS                      61331200 661 911.687   -0.000   -0      0 17.080100 -0.000000 20
 TRANSPORT EQUIPMENT OPERATIVES             62000000   0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0
 TEAMSTERS                                  40000650 763 919.883   -0.000   -0      0 -0.000000 -0.000000 99

LFS = LABOR FORCE SEPARATION
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CLUSTER NO. 14 - SALES (NS3)

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                                        NO. EMPLOYED          CHANGE FROM 74 TO 85      AV. ANNUAL JOB OPENINGS DUE TO:
                                     1974         1985          NOS.        PERCENT      GROWTH       LFS      GROWTH + LFS

  BUYERS, SALES, LOAN MANAGERS    38589.000   47602.000     9013.000       23.400      819.000    1192.000    2012.000
 -BANK, FINANCIAL MANAGERS        10469.000   13759.000     3290.000       31.400      299.000     359.000     659.000
 -CREDIT MANAGERS                  1595.000    1915.000      320.000       20.100       29.000      53.000      82.000
  SALES WORKERS                  140617.000  153415.000    12798.000        9.100     1163.000    5987.000    7150.000
TOTALS                           167142.000  185343.000    18201.000       10.894     1654.000    6767.000    8421.000

  GRAND TOTALS                    1983438.0   2193117.0     193679.0                            10.1       18153.0     82298.0      100459.0

  CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
  BUYERS, SALES, LOAN MANAGERS    1.9455612   2.1804633                                                    2.0028071
  SALES WORKERS                   7.0895580   7.1273375                                                    7.1173314

TOTALS                            9.0351193   9.2077976                                                    9.1201386

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  BUYERS, SALES, LOAN MANAGERS       23.084      25.583                                                       23.893
  SALES WORKERS                      84.133      82.774                                                       84.907

TOTALS                              100.000     100.000                                                      100.000

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  OCCUPATION TITLE                BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES   .   ED
  BUYERS, SALES, LOAN MANAGERS    20020000   0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0
  BANK, FINANCIAL MANAGERS        20020050 202 166.118   -0.000  504      0 -0.000000 -0.000000 40
  CREDIT MANAGERS                 20020100 210 168.168   -0.000   -0     -0 14.089900 -0.000000 40
  SALES WORKERS                   30000000   0  -0.000   -0.000   -0     -0 -0.000000 -0.000000 -0

LFS = LABOR FORCE SEPARATION
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CLUSTER NO. 17 - ARTS AND ENTERTAINMENT (NS3)

	NO. EMPLOYED		CHANGE FROM 74 TO 85		AV. ANNUAL JOB OPENINGS DUE TO:		
	1974	1985	NOS.	PERCENT	GROWTH	LFS	GROWTH + LFS
ACTORS	115.000	167.000	52.000	45.200	5.000	3.000	8.000
ATHLETES AND KINDRED WORKERS	1429.000	2059.000	630.000	44.100	57.000	57.000	115.000
AUTHORS	1259.000	1296.000	37.000	2.900	3.000	54.000	57.000
DANCERS	113.000	147.000	34.000	30.100	3.000	11.000	14.000
DESIGNERS	3947.000	4365.000	418.000	10.600	38.000	107.000	145.000
MUSCIANS AND COMPOSERS	3102.000	3613.000	511.000	16.500	46.000	138.000	184.000
PAINTERS AND SCULPTORS	7958.000	9569.000	1611.000	20.200	146.000	341.000	488.000
PHOTOGRAPHERS	1901.000	2107.000	206.000	10.800	19.000	48.000	67.000
WRITERS, ARTISTS, ENT., NEC	2694.000	3880.000	1185.000	44.000	108.000	97.000	205.000
MOTION PICTURE PROJECTIONIST	326.000	332.000	6.000	1.800	1.000	30.000	30.000
PHOTOGRAPHIC PROCESS WORKERS	1927.000	2370.000	443.000	23.000	40.000	85.000	126.000
TOTALS	24771.000	29905.000	5134.000	20.726	466.000	972.000	1439.000
GRAND TOTALS	1993438.0	2183117.0	189679.0	10.1	18153.0	82240.0	[illegible]459.0
CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS							
ACTORS	.0057983	.0076496					.0079634
ATHLETES AND KINDRED WORKERS	.0720466	.0943147					.1144746
AUTHORS	.0634756	.0593647					.0567396
DANCERS	.0056372	.0067335					.0139369
DESIGNERS	.1980075	.1999415					.1443375
MUSCIANS AND COMPOSERS	.1563051	.1654973					.1831593
PAINTERS AND SCULPTORS	.4012225	.4383182					.4857703
PHOTOGRAPHERS	.0958437	.0965134					.0666939
WRITERS, ARTISTS, ENT., NEC	.1358243	.1777275					.2048633
MOTION PICTURE PROJECTIONIST	.0164361	.0152076					.0298629
PHOTOGRAPHIC PROCESS WORKERS	.0971345	.1085604					.1254243
TOTALS	1.2426421	1.3698304					1.4324252
CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS							
ACTORS	.464	.558					.556
ATHLETES AND KINDRED WORKERS	5.769	6.885					7.992
AUTHORS	5.083	4.334					3.961
DANCERS	.456	.492					.973
DESIGNERS	15.934	14.596					10.076
MUSCIANS AND COMPOSERS	12.523	12.082					12.787
PAINTERS AND SCULPTORS	32.125	31.998					33.912
PHOTOGRAPHERS	7.674	7.046					4.656
WRITERS, ARTISTS, ENT., NEC	10.876	12.974					14.246
MOTION PICTURE PROJECTIONIST	1.316	1.110					2.085
PHOTOGRAPHIC PROCESS WORKERS	7.779	7.925					8.756
TOTALS	100.000	100.000					100.000

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[illegible]                                                                                    (CONTINUED)
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                                   LFS CODE CEN OCCUPATION CODES REGIS CODES VOC-ED CODES      EO
OCCUPATION TITLE                   10220050 175 150.048   -0.000 1007     0 -0.000000 -0.000000 30
ACTORS                             10220100 180 153.348   -0.000  835     0 -0.000000 -0.000000 99
ATHLETES AND KINDRED WORKERS       10220150 181 131.139    0.000 1507     0 -0.000000 -0.000000 48
AUTHORS                            10220200 182 151.048   -0.000 1008     0 -0.000000 -0.000000 30
DANCERS                            10220250 183 142.081   -0.000 1009     0 -0.000000 -0.000000 40
DESIGNERS                          10220350 185 152.080   -0.000 1004     0 -0.000000 -0.000000 40
MUSCIANS AND COMPOSERS             10220400 190 144.080  144.080 1002     0 -0.000000 -0.000000 40
PAINTERS AND SCULPTORS             10220450 191 143.062   -0.000 1011     0 -0.000000 -0.000000 30
PHOTOGRAPHERS                      10220600 194  -0.000   -0.000   -0     0 -0.000000 -0.000000 -0
WRITERS, ARTISTS, ENT., NEC        50140700 535 960.362   -0.000   -0     0 -0.000000 -0.000000 30
MOTION PICTURE PROJECTIONIST       61381100 645 976.380  976.380   -0     0 17.393100 -0.300000 30
PHOTOGRAPHIC PROCESS WORKERS

LFS = LABOR FORCE SEPARATION
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CLUSTER NO. 1[illegible] - PUBLIC SERVICE AND MAINTENANCE [illegible]

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                                       NO. EMPLOYED          CHANGE FROM 7[illegible] TO [illegible]     AV. ANNUAL JOB OPENINGS DUE TO:
                                      197[illegible]        19[illegible]         NOS.        PERCENT        GROWTH        LFS       GROWTH + LFS

 ASSESS. CONTROL. LOC PUB ADMI     [illegible]   374.000    -27.000    -6.[illegible]     -2.000     24.[illegible]    22.[illegible]
 INSPECTORS, EXC CONTRUCT PUB      257[illegible]   33[illegible]    42[illegible]    16.[illegible]     39.000     57.[illegible]   12[illegible]
 OFFICIALS. ADMINS. PUB            [illegible]   [illegible]215.[illegible]   -11[illegible]    -2.[illegible]    -11.00[illegible]   204.[illegible]   [illegible]
 POSTMASTERS AND MAIL SUPER        [illegible]   257.[illegible]   -13[illegible]   -26.[illegible]    -1[illegible].000    14.000     5.000
 TRANSPORTATION, PUB UTIL CRAF     [illegible]   [illegible]1314.[illegible]   -217.00[illegible]   -1.[illegible]   -20.00[illegible]   37.00[illegible]   [illegible].000
-LOCOMOTIVE ENGINEERS              [illegible]   [illegible]   [illegible]   12.[illegible]    9.000    [illegible]6.000    [illegible]
-LOCOMOTIVE ENGINEER HELPERS       [illegible]   [illegible]   -5[illegible]   -5[illegible]   -5.00[illegible]   2.[illegible]   -[illegible]
 GARBAGE COLLECTORS                [illegible]   [illegible]   5[illegible]   26.[illegible]   4[illegible].00[illegible]   [illegible]   [illegible] 000
TOTALS                             [illegible]   [illegible]   42[illegible]   2.[illegible]   57.00[illegible]   [illegible]   [illegible].000

 GRAND TOTALS                      [illegible]   [illegible]   19[illegible]          1[illegible]     1[illegible]     8[illegible]     10[illegible]

 CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
 ASSESS. CONTROL. LOC PUB ADMI     [illegible]   [illegible]                                             [illegible]995
 INSPECTORS. EXC CONTRUCT PUB      [illegible]   [illegible]44                                           [illegible]243
 OFFICIALS. ADMINS. PUB            [illegible]   [illegible]                                             [illegible]162
 POSTMASTERS AND MAIL SUPER        [illegible]   [illegible]                                             [illegible]772
 TRANSPORTATION, PUB UTIL CRAF     [illegible]   [illegible]                                             [illegible]854
 GARBAGE COLLECTORS                [illegible]   [illegible]985                                          [illegible]071

TOTALS                             [illegible]   [illegible]                                             [illegible]

 CLUSTER ENTRIES AS PERCENTAGES [illegible]
 ASSESS. CONTROL. LOC PUB ADMIN    [illegible]   [illegible]                                             [illegible]
 INSPECTORS. EXC CONTRUCT PUB      [illegible]   [illegible]                                             [illegible]
 OFFICIALS. ADMINS. PUB            [illegible]   [illegible]                                             [illegible]
 POSTMASTERS AND MAIL SUPER        [illegible]   [illegible]37.                                          [illegible]
 TRANSPORTATION, PUB UTIL CRAFT    56.[illegible]   [illegible]                                          [illegible]
 GARBAGE COLLECTORS                [illegible]   [illegible]                                             [illegible]

TOTALS                             [illegible]

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 OCCUPATION TITLE                  [illegible] CODE [illegible] OCCUPATION CODES REGIS [illegible]
 ASSESS. CONTROL. LOC PUB ADMI     [illegible]   198.00[illegible] 2102      [illegible]
 INSPECTORS. EXC CONTRUCT PUB      [illegible]   -0.00[illegible]   -0      [illegible]   .2690[illegible]
 OFFICIALS. ADMINS. PUB            [illegible]   -0.0[illegible]  2102      [illegible]   0000[illegible]
 POSTMASTERS AND MAIL SUPER        [illegible]   -0.00[illegible]   -0      [illegible]
 TRANSPORTATION, PUB UTIL CRAF     [illegible]   -0.00[illegible]   -0    -0  [illegible].0000[illegible]   [illegible]
 LOCOMOTIVE ENGINEERS              [illegible]120[illegible] 4[illegible]   -0.000   -0   [illegible] -[illegible].000000 -[illegible]
 LOCOMOTIVE ENGINEER HELPERS       [illegible]120[illegible] 4[illegible]   -0.000   -0   [illegible] -[illegible].000000 -0.0[illegible]
 GARBAGE COLLECTORS                [illegible]   -0.000   -0   [illegible] -[illegible].000000 -0.0[illegible]

LFS = LABOR FORCE SEPARATION
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[illegible]

CLUSTER NO. 13 - ACAD/RESEARCH/PROF/SCIENCE/MANAGEMENT (NS3)

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                                 NO. EMPLOYED          CHANGE FROM 74 TO 85      AV. ANNUAL JOB OPENINGS DUE TO:
                                1974        1985          NOS.        PERCENT      GROWTH       LFS       GROWTH + LFS

   ENGINEERS, TECHNICAL        31471.000   33649.000    2178.000      6.900      198.000     552.000     750.000
   LIFE AND PHYSICAL SCIENTISTS 7084.000    7411.000     327.000      4.600       30.000     165.000     195.000
  -AGRICULTURAL SCIENTISTS       134.000     127.000      -7.000     -5.200       -1.000       4.000       4.000
   MATHEMATICAL SPECIALISTS     1256.000    1562.000     306.000     24.400       28.000      45.000      72.000
   CHEMICAL TECHNICIANS         2957.000    3025.000      68.000      2.300        6.000      57.000      63.000
   MATHEMATICAL TECHNICIANS       27.000      33.000       6.000     22.200        1.000       1.000       1.000
   ENGINEERING, SCIENCE TECH NEC 5854.000   7360.000    1436.000     25.600      136.000     135.000     271.000
   SOCIAL SCIENTISTS            4685.000    5259.000     574.000     12.300       52.000     117.000     169.000
   TEACHERS                    83273.000   81337.000   -1936.000     -2.300     -172.000    4177.000    4005.000
   OTHER PROFESSIONAL,TECHNICAL 72018.000  85397.000   13379.000     18.600     1216.000    2817.000    4034.000
  -FARM MANAGEMENT ADVISORS       14.000      10.000      -4.000    -28.600        0.000       0.000       0.000
  -FORESTERS, CONSERVATIONISTS   154.000     206.000      52.000     33.800        5.000       3.000       8.000
   BANK, FINANCIAL MANAGERS    10469.000   13759.000    3290.000     31.400      299.000     359.000     659.000
   CREDIT MANAGERS              1595.000    1915.000     320.000     20.100       29.000      53.000      82.000
   SCHOOL ADMIN, COLLEGE        1294.000    1531.000     237.000     18.300       22.000      55.000      77.000
   SCHOOL ADMIN, ELEMN, SECOND  4709.000    5804.000    1095.000     23.300      100.000     173.000     273.000
   OFFICE MANAGERS, NEC         7611.000    9799.000    2188.000     28.700      199.000     293.000     492.000
   OFFICIALS OF LODGES, UNIONS  1348.000    1336.000     -12.000      -.900       -1.000      49.000      48.000
   OTHER MGRS, ADMINISTRATORS 115978.000  120442.000    4464.000      3.800      406.000    3649.000    4055.000
   INSPECTORS, LOG AND LUMBER     20.000       7.000     -13.000    -65.000       -1.000       0.000      -1.000
   INSPECTORS, OTHER            3596.000    3417.000    -179.000     -5.000      -16.000     106.000      90.000
TOTALS
                              354873.000  382660.000   27787.000      7.830     2528.000   12796.000   15323.000

   GRAND TOTALS                1983433.0   2183117.0    199684.0                     10.1     18153.0       82298.0        100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   ENGINEERS, TECHNICAL         1.5866894   1.5413283
   LIFE AND PHYSICAL SCIENTISTS  .3571576    .3394658                                                 .7465732
   MATHEMATICAL SPECIALISTS      .0633244    .0715491                                                 .1941090
   CHEMICAL TECHNICIANS          .1490846    .1385633                                                 .0716710
   MATHEMATICAL TECHNICIANS      .0013613    .0015116                                                 .0627122
   ENGINEERING, SCIENCE TECH NEC .2951441    .3360746                                                 .0009954
   SOCIAL SCIENTISTS             .2362063    .2408941                                                 .2697610
   TEACHERS                     4.1985379   3.7243538                                                 .1682278
   OTHER PROFESSIONAL,TECHNICAL 3.6309683   3.9117006                                                3.9867010
   BANK, FINANCIAL MANAGERS      .5278299    .6302457                                                4.0155685
   CREDIT MANAGERS               .0804159    .0877186                                                 .6559890
   SCHOOL ADMIN, COLLEGE         .0652433    .0701291                                                 .0816253
   SCHOOL ADMIN, ELEMN, SECOND   .2374153    .2658546                                                 .3766482
   OFFICE MANAGERS, NEC          .3837276    .4488536                                                 .2717527
   OFFICIALS OF LODGES, UNIONS   .0679625    .0611969                                                 .4897520
   OTHER MGRS, ADMINISTRATORS   5.8473217   5.5168741                                                 .0477807
   INSPECTORS, LOG AND LUMBER    .0010084    .0003206                                                4.0364726
                                                                                                     -.0009954
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                         [illegible]

CLUSTER NO. 14 - ACAD/RESEARCH/PROF/SCIENCE/MANAGEMENT (NSM)                                    (CONTINUED)

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                                          NO. EMPLOYED         CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                         1974       1985        NOS.        PERCENT      GROWTH      LFS     GROWTH + LFS

  INSPECTORS, OTHER                   .1813314-  .1565183                                                      .0895888

 TOTALS                            17.9370342 17.5433605                                                     15.2649340

  CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
  ENGINEERS, TECHNICAL                  8.468      8.793                                                          4.895
  LIFE AND PHYSICAL SCIENTISTS          1.996      1.937                                                          1.273
  MATHEMATICAL SPECIALISTS               .354       .438                                                           .470
  CHEMICAL TECHNICIANS                   .433       .791                                                           .411
  MATHEMATICAL TECHNICIANS               .035       .039                                                           .007
  ENGINEERING, SCIENCE TECH NEC         1.650      1.421                                                          1.769
  SOCIAL SCIENTISTS                     1.320      1.374                                                          1.103
  TEACHERS                             23.445     21.248                                                         26.137
  OTHER PROFESSIONAL,TECHNICAL         23.294     22.317                                                         26.326
  BANK, FINANCIAL MANAGERS              2.850      3.596                                                          4.301
  CREDIT MANAGERS                        .449       .500                                                           .535
  SCHOOL ADMIN, COLLEGE                  .365       .430                                                           .503
  SCHOOL ADMIN, ELEMN, SECOND           1.327      1.517                                                          1.782
  OFFICE MANAGERS, NEC                  2.145      2.561                                                          3.211
  OFFICIALS OF LODGES, UNIONS            .380       .349                                                           .313
  OTHER MGRS, ADMINISTRATORS           32.832     31.475                                                         26.463
  INSPECTORS, LOG AND LUMBER             .006       .002                                                          -.007
  INSPECTORS, OTHER                     1.013       .893                                                           .587

 TOTALS                               100.000    100.000                                                        100.000
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  OCCUPATION TITLE                     BLS CODE CEN OCCUPATION CODES HEGIS CODES VOC-ED CODES      ED
  ENGINEERS, TECHNICAL                 10020000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  LIFE AND PHYSICAL SCIENTISTS         10040000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  AGRICULTURAL SCIENTISTS              10040150  42   13.000   -0.000  100     0 -0.000000 -0.000000 40
  MATHEMATICAL SPECIALISTS             10060000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  CHEMICAL TECHNICIANS                 10080100 151   22.281   -0.000 5305     0 -0.000000 -0.000000 32
  MATHEMATICAL TECHNICIANS             10080300 155   20.188   -0.000 1701     0 -0.000000 -0.000000 32
  ENGINEERING, SCIENCE TECH NEC        10080450 162   -0.000   -0.000   -0     0 -0.000000 -0.000000 99
  SOCIAL SCIENTISTS                    10180000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  TEACHERS                             10200000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  OTHER PROFESSIONAL,TECHNICAL         10240000   0   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  FARM MANAGEMENT ADVISORS             10240300  24   96.128   -0.000  110     0 -0.000000 -0.000000 40
  FORESTERS, CONSERVATIONISTS          10240350  25  441.000   -0.000  114   115 -0.000000 -0.000000 40
  BANK, FINANCIAL MANAGERS             20020050 202  166.116   -0.000  504     0 -0.000000 -0.000000 40
  CREDIT MANAGERS                      20020100 210  168.168   -0.000   -0     0 14.089900 -0.000000 40
  SCHOOL ADMIN, COLLEGE                20040350 235   90.000   -0.000  827     0 -0.000000 -0.000000 51
  SCHOOL ADMIN, ELEMN, SECOND          20040400 240   91.000   92.000  827     0 -0.000000 -0.000000 51
  OFFICE MANAGERS, NEC                 20060150 220  169.166   -0.000   -0     0 14.030500 -0.000000 20
  OFFICIALS OF LODGES, UNIONS          20060250 223   -0.000   -0.000   -0     0 -0.000000 -0.000000 99
  OTHER MGRS, ADMINISTRATORS           20060400 245   -0.000   -0.000   -0    -0 -0.000000 -0.000000 -0
  INSPECTORS, LOG AND LUMBER           50140500 450  941.000   -0.000   -0     0 -0.000000 -0.000000 99
  INSPECTORS, OTHER                    50140550 452    2.000   -0.000   -0     0 -0.000000 -0.000000 99

 LFS = LABOR FORCE SEPARATION
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[illegible]

CLUSTER NO. 2[illegible] - OTHER (NSB)

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                                        NO. EMPLOYED          CHANGE FROM 74 TO 85      AV. ANNUAL JOB OPENINGS DUE TO:
                                       1974        1985        NOS.        PERCENT      GROWTH       LFS      GROWTH + LFS

   OTHER TECHNICIANS EXC HEALTH      979.000    1306.000     327.000     135.500      84.000      30.000     114.000
   RESTAURANT, CAFE, BAR MGRS      13375.000   13470.000      95.000        .900       9.000     376.000     385.000
   FURRIERS                          130.000     103.000     -27.000     -20.800      -2.000       9.000       7.000
   JEWELERS AND WATCHMAKERS          817.000     780.000     -37.000      -4.500      -3.000      34.000      31.000
   PIANO,ORGAN TUNERS,REPAIRERS      209.000     185.000     -24.000     -11.500      -2.000      11.000       9.000
   SHIPFITTERS                       749.000     622.000    -127.000     -17.000     -12.000      11.000      -1.000
   STATIONARY ENGINEERS             4861.000    4120.000    -741.000     -15.200     -67.000     136.000      69.000
   CRAFTS AND KINDRED WRKRS,NEC     3431.000    2826.000    -605.000     -17.600     -55.000      75.000      20.000
   ASSEMBLERS                      22043.000   22358.000     315.000       1.400      29.000     775.000     804.000
   BLASTERS                           25.000      20.000      -5.000     -20.000       0.000       0.000       1.000
   BOTTLING,CANNING OPERATIVES      1355.000    1308.000     -47.000      -3.500      -4.000      45.000      41.000
   MINE OPERATIVES, NEC              182.000     136.000     -46.000     -25.300      -4.000       3.000      -1.000
   OILERS, GREASERS, EXC AUTO        908.000     747.000    -161.000     -17.700     -15.000      20.000       5.000
   PAINTERS, MFG ARTICLES           4191.000    3977.000    -214.000      -5.100     -19.000      91.000      72.000
   SHOEMAKING MACHINE OPERATIVES      71.000      40.000     -31.000     -43.700      -3.000       2.000      -1.000
   FURNACE TENDR, STOKR METAL       2016.000    1620.000    -396.000     -19.600     -36.000      64.000      28.000
   WINDING OPERATIVES, MFG          1244.000    1214.000     -30.000      -2.400      -3.000      38.000      35.000
   MISC MACH OPERATIVES            32580.000   31037.000   -1543.000      -4.700    -140.000     905.000     764.000
   OPERATIVES, NEC                 25420.000   25798.000     378.000       1.500      34.000     756.000     790.000
   GARDENERS,GROUNDKEEPR,EXC FRM    9941.000   12097.000    2156.000      21.700     196.000     410.000     606.000
   TIMBERCUTTING, LOGGING WORKER      38.000      27.000     -11.000     -28.900      -2.000       1.000      -1.000
   VEHICLE WASHERS, EQUIP CLEANR    4315.000    4237.000     -78.000      -1.800      -7.000      77.000      70.000
   WAREHOUSE LABORERS, NEC          3466.000    2987.000    -479.000     -13.800     -44.000      59.000      15.000
   OTHER LABORERS                  11124.000    9976.000   -1148.000     -10.300    -104.000     245.000     141.000
TOTALS                            140370.000  138391.000   -1979.000      -1.335    -169.000    4177.000    4008.000

   GRAND TOTALS                    1999438.0   2183117.0    183679.0                             10.1     18169.0      82290.0       100459.0

   CLUSTER ENTRIES AS PERCENTAGES OF GRAND TOTALS
   OTHER TECHNICIANS EXC HEALTH     .0443170    .0327259                                                              .1134963
   RESTAURANT, CAFE, BAR MGRS       .5432495    .4979119                                                              .3832429
   FURRIERS                         .0065543    .0047152                                                              [illegible]
   JEWELERS AND WATCHMAKERS         .0411911    .0357297                                                              [illegible]
   PIANO,ORGAN TUNERS,REPAIRERS     .0105373    .0084741                                                              .0089689
   SHIPFITTERS                      .0377627    .0284914                                                             -.0009954
   STATIONARY ENGINEERS             .2450795    .1887219                                                              .0686847
   CRAFTS AND KINDRED WRKRS,NEC     .1729525    .1294473                                                              .0198949
   ASSEMBLERS                      1.1117531   1.0241323                                                              .8003265
   BLASTERS                         .0012784    .0009161                                                             0.0000000
   BOTTLING,CANNING OPERATIVES      .0693157    .0599143                                                              .0408127
   MINE OPERATIVES, NEC             .0091763    .0062296                                                             -.0009954
   OILERS, GREASERS, EXC AUTO       .0457741    .0342171                                                              .0049726
   PAINTERS, MFG ARTICLES           .2112333    .1821737                                                              .0716856
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[illegible]

CLUSTER NO. [illegible] - OTHER (NEC)                                                                          (CONTINUED)

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                                          NO. EMPLOYED             CHANGE FROM 74 TO 85     AV. ANNUAL JOB OPENINGS DUE TO:
                                          1974        1985          NOS.       PERCENT      GROWTH     LFS      GROWTH + LFS

    SHOEMAKING MACHINE OPERATIVES       .0035795    .0014322                                                      0.0000000
    FURNACE FENDR, STOKR METAL          .1016417    .0742055                                                       .0278721
    WINDING OPERATIVES, MFG             .0527134    .0556346                                                       .0348401
    MISC MACH OPERATIVES               1.6426024   1.4210819                                                       .7605093
    OPERATIVES, NEC                    1.2416130   1.1917049                                                       .7873659
    GARDENERS,GROUNDKEEPR,EXC FAR       .5312034    .5041160                                                       .6032312
    TIMBERCUTTING, LOGGING WORKER       .0019159    .0012358                                                      0.0000000
    VEHICLE WASHERS, EQUIP CLEANR       .2175519    .1940403                                                       .0686847
    WAREHOUSE LABORERS, NEC             .1747471    .1364227                                                       .0149315
    OTHER LABORERS                      .5608444    .4569613                                                       .1393603

  TOTALS                               7.0972725   6.3620512                                                      3.9936828

   CLUSTER ENTRIES AS PERCENTAGES OF CLUSTER TOTALS
   OTHER TECHNICIANS EXC HEALTH            .524       1.300                                                        2.968
   RESTAURANT, CAFE, BAR MGRS             7.954       7.526                                                        9.603
   FURRIERS                                .032        .074                                                         .150
   JEWELERS AND WATCHMAKERS                .580        .562                                                         .748
   PIANO,ORGAN TUNERS,REPAIRERS            .148        .133                                                         .224
   SHIPFITTERS                             .572        .445                                                        -.025
   STATIONARY ENGINEERS                   3.453       2.966                                                        1.721
   CRAFTS AND KINDRED WRKRS,NEC           2.437       2.035                                                         .574
   ASSEMBLERS                            15.453      15.098                                                       20.055
   BLASTERS                                .018        .014                                                        0.000
   BOTTLING,CANNING OPERATIVES             .363        .342                                                        1.023
   MINE OPERATIVES, NEC                    .123        .094                                                        -.025
   OILERS, GREASERS, EXC AUTO              .645        .538                                                         .150
   PAINTERS, MFG ARTICLES                 2.377       2.963                                                        1.771
   SHOEMAKING MACHINE OPERATIVES           .050        .023                                                        0.000
   FURNACE FENDR, STOKR METAL             1.432       1.166                                                         .698
   WINDING OPERATIVES, MFG                 .744        .874                                                         .873
   MISC MACH OPERATIVES                  23.144      22.346                                                       19.057
   OPERATIVES, NEC                       18.358      18.574                                                       13.731
   GARDENERS,GROUNDKEEPR,EXC FARM         7.352       8.712                                                       15.116
   TIMBERCUTTING, LOGGING WORKERS          .027        .019                                                        0.000
   VEHICLE WASHERS, EQUIP CLEANRS         3.065       3.051                                                        1.721
   WAREHOUSE LABORERS, NEC                2.462       2.151                                                         .374
   OTHER LABORERS                         7.902       7.183                                                        3.492

  TOTALS                                100.000     100.000                                                      100.000
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OCCUPATION TITLE                   BLS CODE CEN OCCUPATION CODES  HEGIS CODES VOC-ED CODES             ED
OTHER TECHNICIANS EXC HEALTH       13140350 173   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
RESTAURANT, CAFE, BAR MGRS         20060150 230  157.166   -0.000   -0       0  4.020300 -0.000000 20
FURRIERS                           50140300 444  142.001   -0.000   -0       0 -0.000000 -0.000000 99
JEWELERS AND WATCHMAKERS           50140600 453 [illegible] 715.000 -0      0 17.210200 -0.000000 30
PIANO,ORGAN TUNERS,REPAIRERS       50140950 516 [illegible] -0.000  -0      0 -0.000000 -0.000000 30
SHIPFITTERS                        50140950 540  806.381   -0.000   -0       0 -0.000000 -0.000000 99
STATIONARY ENGINEERS               50141000 545  950.782   -0.000   -0       0 17.329000 -0.000000 30
CRAFTS AND KINDRED WRKRS,NEC       50141200 571   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
ASSEMBLERS                         61030100 602  739.000   -0.000   -0       0 -0.000000 -0.000000 99
BLASTERS                           61050150 603  959.281   -0.000   -0       0 17.109900 -0.000000 30
BOTTLING,CANNING OPERATIVES        61060200 604   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
MINE OPERATIVES, NEC               61080900 640  939.000   -0.000   -0       0 -0.000000 -0.000000 30
OILERS, GREASERS, EXC AUTO         61081000 642  699.887   -0.000   -0       0 -0.000000 -0.000000 20
PAINTERS, MFG ARTICLES             61081050 644   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
SHOEMAKING MACHINE OPERATIVES      61081350 664  695.000  758.000   -0       0 17.340100 -0.000000 20
FURNACE TENDR, STOKR METAL         61081400 665  951.389   -0.000   -0       0 17.320000 -0.000000 34
WINDING OPERATIVES, NEC            61081450 681   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
MISC MACH OPERATIVES               61081500 690   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
OPERATIVES, NEC                    61081550 695   -0.000   -0.000   -0       0 -0.000000 -0.000000 99
GARDENERS,GROUNDKEEPR,EXC FAR      80000350 755  [illegible] 407.000 -0      0  1.050400 -0.000000 20
TIMBERCUTTING, LOGGING WORKER      80000450 761 [illegible] -0.000  -0      0 -0.000000 -0.000000 99
VEHICLE WASHERS, EQUIP CLEANR      80000600 764  781.000  919.000   -0       0 -0.000000 -0.000000 99
WAREHOUSE LABORERS, NEC            80000650 770  922.887   -0.000   -0       0 -0.000000 -0.000000 99
OTHER LABORERS                     80000700 780   -0.000   -0.000   -0       0 -0.000000 -0.000000 99

LFS = LABOR FORCE SEPARATION
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APPENDIX D

SURVEY QUESTIONNAIRE FOR EIGHTH AND NINTH GRADE STUDENTS

FOR OFFICE USE ONLY
DO NOT WRITE IN THIS SPACE

ID	1-7
CARD 1	1 8
	9
	10
	11-13
	14
	15-18
	19-22

NAME____________________________________

ETHNICITY ○ WHITE ○ BLACK ○ AMERICAN INDIAN
○ ORIENTAL ○ SPANISH SURNAME ○ OTHER

SEX ○ MALE ○ FEMALE

SCHOOL____________________________________

GRADE____________________________________

ADVISORY ROOM NUMBER________________________

BIRTH DATE______________ TODAY'S DATE______________

DO NOT WRITE IN THIS SPACE

A.E.	23-24
INTERVIEWER	25-26
CODER	27
C.T.	28-33
%	34-35
C—R. M	36-44

YOU OFTEN HEAR THE QUESTION, "WHAT WOULD YOU LIKE TO BE WHEN YOU GROW UP?", WHICH REALLY MEANS WHAT KIND OF JOB DO YOU WANT TO HAVE WHEN YOU ARE AN ADULT. THIS QUESTIONNAIRE IS ABOUT JOBS AND SOME OF THE CHOICES WE MAKE IN RELATION TO JOBS.

THIS IS NOT A TEST. NO GRADES WILL BE GIVEN. YOUR ANSWERS, HOWEVER, ARE VERY IMPORTANT. THEY WILL HELP US DESIGN THE HIGH SCHOOL PROGRAM THAT YOU WANT AND THAT WILL LEAD TO A BETTER CHANCE OF YOUR GETTING A GOOD JOB.

FOR EACH QUESTION, SELECT ONE ANSWER AND FILL IN THE BUBBLE NEXT TO IT.

1. What would you like to be doing when you are about 35 years old?

   ○ (1) working
   ○ (2) keeping house and raising a family
   ○ (3) both—working plus keeping house and raising a family

   45

2. What kind of job would you like to have when you are about 35 years old?

   ____
   (You may answer housewife if that is what you would like to be doing.)

   C 46-48

3. Do you have a second choice for the job you would like to be doing when you are about 35 years old?

   ____

   C 49-51

FOR GIRLS ONLY

4. Do you plan to work after you finish school?

   ○ (1) yes ○ (2) no

   52

5. Do you plan to work when your children are young (under 6 years old)?

   ○ (1) yes ○ (2) no ○ (3) don't plan to have children

   53

6. Do you plan to work when your children are in school?

   ○ (1) yes ○ (2) no ○ (3) don't plan to have children

   54

7. Do you plan to work when your children are grown up?

   ○ (1) yes ○ (2) no ○ (3) don't plan to have children

   55

PEOPLE LIKE DIFFERENT THINGS ABOUT THEIR JOBS. TELL US HOW IMPORTANT EACH OF THE FOLLOWING IS TO YOU. FILL IN THE BUBBLE NEXT TO THE STATEMENT THAT IS CLOSEST TO THE WAY YOU FEEL

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8. How important is it to you that the occupation you choose pays well?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

56

9. How important is it to you that the occupation you choose gives you a lot of respect from others?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

57

10. How important is it to you that the occupation you choose may make you famous?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

58

11. How important is it to you that the occupation you choose gives you a chance to help people?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

59

12. How important is it to you that the occupation you choose gives you a chance to meet people?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

60

13. How important is it to you that you don't have to stay in school for a long time to prepare for the occupation you choose?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

61

14. How important is it to you that the occupation you choose gives you a chance to use your special talent or ability?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

62

15. How important is it to you that the occupation you choose offers steady work, and you are less likely to be fired?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

63

16. How important is it to you that the occupation you choose is the kind of job where you can set your own hours?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

64

17. How important is it to you that the occupation you choose offers very interesting work?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

65

18. How important is it to you that the occupation you choose gives you a chance to be your own boss?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

66

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19. How important is it to you that the occupation you choose gives you a chance to work with people?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

67

20. How important is it to you that the occupation you choose gives you a chance to work outdoors?

0 (1) very important 0 (2) somewhat important

0 (3) not very important 0 (4) not important at all

68

21. Do you plan to work in the Philadelphia city or suburbs after completing your education?

0 (1) yes 0 (2) no

69

22. If it is very hard for you to find a job in the Philadelphia city or suburbs, would you move to another part of the country to look for work?

0 (1) yes 0 (2) no

70

THERE ARE MANY WAYS IN WHICH PEOPLE FIND OUT ABOUT THE DIFFERENT KINDS OF JOBS. THEY USE THE INFORMATION TO HELP THEM MAKE UP THEIR MINDS ABOUT WHAT THEY WOULD LIKE TO BE DOING WHEN THEY ARE OUT OF SCHOOL.

23. How did you find out about the job you said you would like to have when you are about 35 years old? (Select the most important answer and fill in the bubble next to it.)

0 (1) I know someone who has this kind of job
0 (2) I heard about it from my friends
0 (3) My parents told me about it
0 (4) I saw a program in school about this kind of work
0 (5) I heard about it from the school counselor
0 (6) I heard about it from one of my teachers
0 (7) I saw someone on TV doing this kind of work
0 (8) I read about it in a magazine, book or newspaper
0 (9) I saw someone doing this kind of work
0 (10) I had a part-time or a summer job where I did this kind of work.
0 (11) other________________________________

71-72

OFTEN YOU TAKE DIFFERENT KINDS OF COURSES OR HIGH SCHOOL PROGRAMS TO HELP YOU PREPARE FOR THE JOB THAT YOU WANT.

24. What high school will you be attending when you are in the tenth grade?

____

73-75

25. What course selection will you be taking in the tenth grade?

0 (1) vocational 0 (2) academic 0 (3) general

0 (4) commercial 0 (5) don't know

76

26. If you do not plan to take a vocational or commercial program, do you plan to take any vocational or commerical courses?

0 (1) yes 0 (2) no 0 (3) don't know

0 (4) I plan to take a vocational or commercial program

77

27. Did you take an algebra course last year?

0 (1) yes 0 (2) no

78

28. Are you taking an algebra course this year?

0 (1) yes 0 (2) no

79

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29. Will you be taking an algebra course next year?

0 (1) yes   0 (2) no   0 (3) don't know   80

END CARD 1
BEGIN CARD 2
ID 1-7

30. Why did you select the school you will be attending in tenth grade? (Select the most important answer and fill in the bubble next to it.)

CARD 2
8

0 (1) I was assigned to that school
0 (2) It offers a program that I want to take
0 (3) My friends are going there
0 (4) It is near where I live
0 (5) My parents want me to go there
0 (6) It's supposed to be a good school   9

31. Why did you choose the course selection you will be taking in tenth grade?

0 (1) It will help prepare me for the job I would like to have as an adult
0 (2) I have friends who will be in that program
0 (3) My parents want me to take that program
0 (4) I was assigned to that program   10

32. Has your school guidance counselor or career counselor ever talked to your class about choosing a program or a school?

0 (1) yes   0 (2) no   11

33. Have you ever had a personal meeting with your school guidance or career counselor to talk about choosing a program or a school?

0 (1) yes   0 (2) no   12

34. Who set up this meeting with your school guidance or career counselor?

0 (1) I asked to see him or her
0 (2) The guidance or career counselor called me into his/her office
0 (3) I have never had a personal meeting with the guidance or career counselor   13

35. Do you think your school guidance or career counselor could help you choose a job or a kind of work?

0 (1) yes   0 (2) no   14

36. How much education do you think you will get?

0 (1) I will not finish high school
0 (2) finish high school
0 (3) go to business, technical or nursing school
0 (4) go to college for awhile
0 (5) go to college and graduate from college
0 (6) go to graduate school (for example, medical school, law school, master's degree or doctorate   15

37. If you had good enough grades and enough money to keep going to school, how far would you like to go in school?

0 (1) I would not finish high school
0 (2) I would graduate from high school
0 (3) I would go to a business, technical or nursing school
0 (4) I would go to college for awhile
0 (5) I would graduate from college
0 (6) I would go to graduate school or professional school   16

38. Do you think you know enough about the kinds of jobs there are and how much they pay?

0 (1) yes   0 (2) no   17

39. Do you think you know enough about how to prepare for the job you want?

0 (1) yes   0 (2) no   18

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40. If you wanted to know more about jobs and work, which of the following do you think would be most helpful? (Choose one answer.)

0 (1) your parents (or parent)
0 (2) your teachers
0 (3) your school counselors
0 (4) some other adult
0 (5) your friends or brothers or sisters
0 (6) reading about it

19

WE'D LIKE YOUR OPINION ABOUT THE KIND OF WORK YOU WOULD LIKE TO BE DOING WHEN YOU ARE AN ADULT. THAT IS, WE WOULD LIKE TO KNOW MORE ABOUT THE JOB YOU SAID YOU WOULD LIKE IN QUESTION 2.

41. What do you think your chances are of actually getting into this kind of work?

0 (1) excellent
0 (2) good
0 (3) fair
0 (4) poor

20

42. Are most of the people in this occupation men or women?

0 (1) men 0 (2) women 0 (3) don't know

21

43. How much education do people in this occupation usually have?

0 (1) less than a high school diploma
0 (2) a high school diploma
0 (3) some training after graduating from high school (for example, technical school, business school, apprenticeship program)
0 (4) some college
0 (5) college degree
0 (6) don't know

22

44. Do most of the people in the occupation you have chosen earn more, less, or the same as a teacher?

0 (1) more 0 (2) less 0 (3) the same

23

45. Do most of the people in the occupation you have chosen earn more, less, or the same as a department store sales woman?

0 (1) more 0 (2) less 0 (3) the same

24

46. Do most of the people in the occupation you have chosen earn more, less, or the same as a lawyer?

0 (1) more 0 (2) less 0 (3) the same

25

47. How many brothers and sisters do you have? ____________________

26-27

48. Are you the oldest child in your family?

0 (1) yes 0 (2) no

28

49. What is your father's occupation? ____________________

0 (1) deceased 0 (2) don't know

C 29-31

50. How much regular schooling do you think your father has?

0 (1) less than a high school diploma
0 (2) a high school diploma
0 (3) some college
0 (4) college degree
0 (5) don't know

32

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31. What is your mother's occupation? (You may answer housewife if your mother doesn't usually work outside her home.)

____ C ____ 33-35

○ (1) housewife ○ (2) deceased ○ (3) don't know

32. How much regular schooling do you think your mother has?

○ (1) less than a high school diploma
○ (2) a high school diploma
○ (3) some college
○ (4) college degree
○ (5) don't know

____ 36

33. Sometimes it is not possible to get the job that you would most like. Realistically, what job or kind of job do you think you will have when you are about 35 years old?

____ C ____ 37-39

FOR EACH OF THE FOLLOWING SENTENCES, FILL IN THE BUBBLE NEXT TO THE STATEMENT THAT COMES CLOSEST TO THE WAY YOU FEEL.

34. The most important part of work is the pleasure which comes from doing it.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 40

35. When I make plans I usually find that I can make them work.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 41

36. I would rather take a job I didn't like than receive money from the unemployment office.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 42

37. It's who you know and not what you know that's important in getting a job.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 43

38. I have a good idea of what kind of job I would enjoy doing as an adult.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 44

39. I get better grades in school when I work harder

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 45

40. If I can't find a job, I see nothing wrong with receiving money from the unemployment office.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 46

41. Whether or not a person is successful depends on hard work, luck has little or nothing to do with it.

○ (1) agree a lot ○ (2) agree a little
○ (3) disagree a little ○ (4) disagree a lot

____ 47